The Journal of the
American Medical Association

VOL. XVII. CHICAGO, JULY 25, 1891. No. 4.

ORIGINAL ARTICLES.

ON APPENDICITIS AND PERICÆCAL INFLAMMATION. WITH NOTES OF CASES ILLUSTRATING UNUSUAL DIFFICULTIES IN DIAGNOSIS.

Read before the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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No subject within the domain of abdominal surgery within recent years, has made such decided progress, or is at the present time, attracting more attention than that of operation for intestinal lesions, whether due to traumatism or disease.

The fact that perforation so frequently complicates perityphlitis, brings the question of the management of such cases prominently before us as surgeons, and requires that we should not only entertain decided convictions as regards the pathology of the affection, but also have well matured opinions as to the details of operating, and upon the time when such operation should be performed with the least risk to the patient, and with the prospect of the most successful result.

PART I.—ANATOMY, PATHOLOGY, AND DIAGNOSIS.

Appendicitis, simple or perforating, with resulting perityphlitic inflammation, or pericæcal abscess, is a comparatively common pathological accident; and its diagnosis and treatment belong both to medicine proper and to surgery. Almost invariably the case is first seen by a physician, and, as the records will prove, very much depends upon his ability to promptly diagnosticate the morbid condition, and to appreciate the importance, in certain cases, of early surgical operation for its relief, and on the other hand, the gravity of the responsibility assumed in delaying operative procedure until the patient is in a dying condition, or fast approaching it. Upon the physician also usually devolves the duty of acquainting the family of the patient, or the patient himself, of the peril he is in, and of convincing them that delay is indeed dangerous when an abscess has formed adjacent to the appendix vermiformis, and peritonitis is threatening or is actually in progress. The surgeon is interested especially in the diagnosis and details of operation, and in any special dangers or difficulties attending it.

I have thought therefore that this would be an appropriate topic to bring before this section for discussion. Moreover, this subject is attracting a great deal of attention at the present time; so much so, indeed, that the American Surgical Association, and other societies have repeatedly had it up for consideration within the last few years, and it has more than once received contributions from our own proceedings. At its meeting in December, 1887, three papers were read before the County Medical Society of Philadelphia: One on the "Pathology of Pericæcal Inflammation," by Dr. John H. Musser; one upon "Diagnosis," by Dr. William Pepper; and one upon "Treatment," by myself, by invitation of the society. In my communication, the indications for the operation, its technique, and details of after-treatment, were clearly indicated. I may say now, more than three years later, that subsequent events have not lead me to abandon, but rather to confirm, the views then expressed as to diagnosis and treatment. I then presented a case which had been operated upon by me in the spring of 1887, in the manner prescribed in that paper, which made an excellent recovery after removal of an ulcerated and perforated appendix. I have reported a number of others since that time, showing the importance of early diagnosis, prompt operation, exploration of the abscess cavity and removal of the cause of the mischief. The case just referred to, I may say, was the first recovery on record, so far as I am aware, where the radical operation of amputation of the appendix was deliberately undertaken for the relief of pericæcal abscess. This alone is sufficient to show how recently the subject has claimed the attention of the profession.

This operation just referred to, has already become one of the established procedures of surgery. It is somewhat surprising, therefore, to learn that some surgeons still use the aspirating needle in the diagnosis of abscess, and do

not consider it of vital importance even to remove the appendix in the treatment. And yet this is what a western surgeon reports that he witnessed when on a recent visit to the Metropolis (*American Practitioner and News*, Louisville, Ky., Vol. x, page 380).

This, to say the least, betrays a deplorable want of agreement among surgeons and teachers of surgery as regards one of the most vital questions of operative treatment, and even the means of diagnosis.

I think that the present state of abdominal surgery will support me in stating that, as a rule, in any abscess of the ileo cæcal region, appendix disease should be suspected, and in such case the organ should always be sought for, in order to ascertain its condition; unless this is done the very first principles of correct treatment are violated. If a diseased appendix be permitted to remain it is liable to set up further mischief. In such a case, as the rule, the future welfare of the patient demands that it should be excised, unquestionably so if inflamed, perforated, or containing foreign bodies.

It seems surely as if enough had been said, with regard to the dangers of using the exploring needle, of its utter unreliability, and of its inability to afford information of any value in these cases, to cause its complete abandonment, especially by surgeons who occupy important and responsible positions as teachers and operators, and who aim to serve as guides for others.

A brief review of the pathology of appendicitis, I think, will make it clear to us all, that the life of the patient often depends upon the ability of the medical attendant to promptly recognize the cause of the disease, and to early institute the proper measures for its relief and very often its removal, as the only way to afford relief and permanent safety to the sufferer.

In taking up the systematic discussion of this subject it is perhaps better to very briefly recall the anatomical relations of this part of the body, and the position of the appendix in health and disease.

Anatomy.—From a number of dissections of bodies where death has been produced by disease not affecting this locality, made by me and under my direction at the Pennsylvania Hospital, and elsewhere, I can supplement the very meagre and often incorrect notices of the anatomy of the appendix usually contained in our text-books. In the first place the opening into the appendix from the cæcum is not patulous, as it is represented ordinarily; this opening is also occluded by any abrupt change of direction of the process by which it often becomes parallel with the bowel. This places a valvular fold of mucous membrane directly over the opening which usually closes it as effectually as the foramen ovale is closed in the heart during the first few days after birth. Moreover, it is stated by good authority that the calibre of the appendix internally is about the size of a goose quill. I question very much the accuracy of this statement in any case, as I have never found it to be anything approaching this size in health; and rarely, if ever, is it distended throughout its course, by secretion to such an extent as this; ordinarily there is no cavity at all, as the walls are collapsed, and I have found that a good sized probe was as much as could freely pass through the canal.

The opening into the appendix is visible upon the inner (left) side of the lower and posterior extremity of the cæcum; it is covered with the folds of mucous membrane and occluded by mucus under ordinary conditions. Were this not the case, and the opening patulous, as is so frequently figured (especially if the calibre were as large as some have represented), appendicitis would be a far more common affection than it is; and, indeed, few children would live to attain the age of adult existence. In length, the appendix varies from two to five, or even nine inches, as I found it in one case. It varies in normal position and direction; so that it can scarcely be said to have normal position; most frequently it is found upon the posterior and inner (or left) side of the cæcum and ascending colon, extending upward towards the liver or gall bladder, to which it may be adherent. The free extremity often points toward the spleen, but it may fall down into the pelvis, and become adherent to the broad ligament or right ovary, or it may become twisted around the small intestines, forming a loop which may cause obstruction or strangulation of the bowel, or finally it may become part of an inguinal or scrotal hernia. At its base the appendix joins the cæcum, obliquely, on the posterior and inner side, just below and on the same side as the ileo cæcal valve, but not at the lowest portion of the cæcum. The summit of the appendix or free extremity is rounded and imperforate. Upon splitting it open, longitudinally, you notice the comparatively great thickness of the walls, both the mucous coat and submucosa being well represented. The glands in the mucous membrane secrete a small amount of mucus, which, with the epithelial débris, is gradually discharged into the cæcum. Should the opening into the cæcum become impervious from any cause, these secretions may gradually accumulate and become inspissated, forming casts or round balls, resembling cherry stones, but consisting of sandy and organic matter. Such secretions are very common.[1] The follicles of Lieberkuhn are numerous

[1] In 13 consecutive post-mortems made by me in persons who died from other causes than intestinal disease, the appendix in every instance but one contained fecal concretions. In a number, the foreign bodies were quite soft, others were firm, some gritty, yellow or brown in color. The canal of the appendix in several was blocked for an inch or more by a series of such fecal masses, which resembled mice dung. Such material imprisoned may readily excite irritation, inflammation, ulceration and finally perforation and abscess.

in the appendix, and the agminated Peyerian glands are also well developed near the summit of the tube, according to the late Prof. Henry H. Smith, who was also inclined to think that a gland or two of Brunner might also be present. In the lower animals, especially among the rodentia, the appendix is much larger than in man and is so richly endowed with glands as to fulfil an important purpose in digestion. The canal of the appendix is also relatively, much larger in the infant than in the adult.[2] In the newly born infant the appendix frequently contains meconium.

Dr. Formad, Coroner's Physician and Pathologist in the Philadelphia Hospital, confirms the above observation with regard to the presence of glands in the appendix, and states that he had frequently met with typhoid and tubercular ulcerations and catarrhal changes in the vermiform appendix as a part of a general disease of the mucous membranes of either the large or small intestines. He also has found "Fecal matter and concretions exceedingly common in the vermiform appendix, surely much more common than is generally held."[3] Authentic cases have been recorded by Morgani, John Hunter, Meckel, Haller and others, where the appendix was wanting in otherwise normal individuals. I think that as regards its functions nothing need be said. Whatever relation it may have to the act of digestion in some of the lower animals, in man it is merely a rudimentary organ, having no function, since it may be naturally absent without affecting the health of the individual, and after its removal by operation, the patient has perfect digestion and suffers no inconvenience from its loss. Speaking from a surgical standpoint, it would seem that the principle function of the appendix is to get inflamed and cause peri-typhlitic abscess.

PATHOLOGY.

The chief interest in the pathology of appendicitis lies in the relation existing between disease of the appendix and pericæcal inflammation and abscess; a relation which, in many cases, is very intimate and easily demonstrated. Pathologically as well as anatomically, the appendix is part of the cæcum; its structures are continuous, and inflammation or other morbid process may extend from one to the other, and yet as a matter or experience, it is generally found that the appendix may be the seat of inflammation, even perforation or gangrene, while the cæcum remains unaffected, or at the most is only affected secondarily. As to the cause of appendicitis, it appears to be always traumatic, or at least the inflammation and ulceration is due to the presence of retained secretions, or of a concretion which acts as a foreign body, oftentimes the inflammation being excited by a blow or unusual physical effort. I repeat that irritation, inflammation, and perforation of the appendix is most frequently, if not invariably, caused by the presence of foreign bodies in the canal of the organ. Such substances are usually phosphatic, or fecal concretions or small objects aggregated which have gained entrance, or the ordinary secretions of the canal may be condensed into concretions made up of epithelial or other constituents. The retention of such material may be caused by stenosis of the cæcal opening, or by thickening of the mucous coat, or by any abrupt change in the position of the appendix which occurs when the organ becomes adherent to the cæcum, so that the outlet of the organ becomes more or less blocked. While it is popularly believed that such concretions are originally foreign bodies, such as grape seeds or cherry pips, this is rarely the case. In the great majority of cases the masses are more or less globular, others are shaped like small date stones, moulded to the interior of the canal, evidently a collection from mucous secretion which deposited phosphate and carbonate of lime upon a nucleus of fæcal origin. As previously intimated, some of the cases are due to occlusion of the canal, and are attributable to retained secretion. Many undoubted cases have been reported, however, in which foreign bodies, such as pins, needles, oyster shell, small seeds, etc., have entered the appendix from the bowel, and caused perforative appendicitis.

In default of a more satisfactory classification of cases of inflammation of the appendix and its results, I feel justified, after considerable experience, in recognizing three varieties or groups of the affection.

First group.—*Irritation or inflammation.* Cases of simple irritation or inflammation of the appendix during the first attack, cannot be positively recognized, but the recurrence of such an attack, establishes a strong probability of this diagnosis.

Every practitioner is familiar with ordinary appendicitis; the symptoms are quite characteristic; the disease is not infrequent and is generally soon recovered from. Recurring attacks also are very common, the intervals being variable, from a few weeks to several months, or, as in some cases, years may intervene. If the cause has been due to some irritating foreign body, and the organ has been able to discharge its contents into the cæcum, a permanent recovery may result, but such favorable termination rarely occurs. If the disease arose from retained secretions, which have been gotten rid of, atrophy of the appendix

[2] Prof. Leidy, under date of February 27, 1891, in a note to me says: "I have observed the appendix varying from about three to nearly six inches in length, but have never seen such a case in which it was absent. In the infant it appears to be less abruptly an extension of the cæcum, that is to say, from the subsequent greater proportionate enlargement of the latter, the appendix becomes a more abrupt extension."

[3] Dr. Toft of Copenhagen, who, while prosecutor to the Royal Frederiks Hospital, found residua of appendicitis in the form of adhesions in 35 per cent. of all post-mortem examinations made.

may follow on the subsidence of the inflammation and the organ become a cord-like body, no longer liable to internal disturbance. If the appendicitis be due to minute solid bodies, attack after attack is likely to occur, and as these increase in size, the probability of ulceration of the mucous membrane from pressure is likely to increase as time goes on.

Second Group:—*Inflammation, ulceration, or perforation.* Any case of mild appendicitis belonging to the first group of cases may pass to the second. As a result of attacks of appendicitis of a more or less severe type, lymph exudation is thrown out, not only about the appendix, but upon and around the neighboring structures. If upon the intestines, such exudation may occasion bowel paralysis, or bands of lymph may involve the intestine subsequently in absolute destruction. So, likewise, lymph may be exuded in sufficient amount in all directions on the peritoneal surfaces, and form a barrier more or less complete, sufficient to protect the general peritoneal cavity from septic contamination, when abscess forms in the pericæcal region. In other cases the exudation forms a distinct abscess wall completely encysting the appendix, and constitutes the distinct tumor, so often observed in such cases; it is usually well defined, immovable, more or less dense, and painful to pressure. Although it may contain pus, as a result of perforation of the appendix, there is no fluctuation until the tumor increases in size; as it approaches the surface, the superimposed tissues become œdematous. Such abscesses may open through the abdominal wall, and so establish a fistula between the bowel, the abscess cavity and the external abdominal surface, or at any other point where the abscess should tend.

This lymph exudation which surrounds the appendix when ulceration and perforation is imminent, may appear very quickly; the results of perforation are thus emptied into the lymph mass, and are held absolutely encysted. As the pus increases in the interior of the tumor, the exudation of lymph may increase, or the wall of the abscess may become thinner, and so the abscess may burst into the peritoneal cavity, or into the superimposed cellular tissue. The formation of pus due to a perforated appendix is announced by most characteristic symptoms if the pus come in contact with the peritoneum; but when the appendix perforates into a lymph tumor, the peritoneum is guarded, and the symptoms of pus formation are not so marked; indeed there are frequently no symptoms whatever which would indicate such an accident.

Third Group: — *Ulceration and Perforation*, with insufficient lymph protective walls.

Many of the reported cases belong to this class. The symptoms appear suddenly, and present the gravest characters. Now, and then especially in children, the disease advances with intense rapidity, the patient early entering a condition bordering on collapse; such cases I have seen terminate fatally in forty-eight hours, or even less time. Careful inquiry revealed in every case, the fact of a former attack of appendicitis. In such cases when perforation happens, there is either no lymph protection to the peritoneum when the accident occurs, or else the exudation has been insufficient, so that when sloughing or perforation takes place, the contents of the appendix and the sloughing tissue are at once brought into contact with the general peritoneum. Such cases are early associated with symptoms of unusual depression, and often profound collapse.

DIAGNOSIS.

First Group of Cases: — Pain is usually the earliest and most common symptom of appendicitis. It may come on suddenly or the reverse, be slight, resembling colic, or severe in character; it is usually increased by pressure. There may be nausea and vomiting, and a coated tongue and constipation are commonly present. There is generally some acceleration of pulse, and a slightly elevated temperature. The ileo cæcal region is generally tympanitic. Sooner or later all these symptoms may disappear and convalescence apparently be established. As I have in former papers pointed out, the occurrence of symptoms such as above detailed, especially if there has been a relapse or recurrence, are serious enough to give rise to grave apprehensions for the future, for in a patient with a diseased appendix, a blow, slight local injury, undue exercise, straining, constipation, or even an attack of indigestion, may provoke a recurrence of irritation in the already diseased organ which may lead to inflammation, ulceration, and perforation. Such cases as I have detailed, which do not proceed to ulceration and perforation, are of very common occurrence; under appropriate treatment they go on to apparent recovery. I believe, however, in all cases of pericæcal irritation or inflammation (or, at least, in by far the great majority of such), the appendix is the source of, and responsible for this condition; the danger is therefore not overcome by the subsidence of the symptoms even if such are ever so mild. The subject of such an attack or attacks, may recover by discharge of the contents of the appendix into the cæcum; or through atrophy of the organ or adhesion to the cæcum with more or less complete obliteration of its calibre. But such a favorable result must be very exceptional, and its occurrence in any given case cannot be depended upon.

Second Group:—Incident to the inflammation, consequent upon repeated attacks of appendicitis, adhesions may take place, which involve not on-

ly the adjacent intestine, which may cause more or less obstruction, but as a result of such attacks, lymph exudation takes place, often in large amount, which may completely envelop the appendix.

It is this exudation which forms the tumor in such cases, so that when perforation occurs, the pus does not gain access to the general abdominal cavity, but remains encysted; if this protection did not frequently exist, perforated appendicitis would be a much more fatal affection. This tumor wall is often quite dense and thick; when its contents increase the sac distends proportionately, or if more or less thin, the abscess may open and discharge its contents, either into the peritoneal cavity or into the superimposed tissues and reach the surface, or in some cases, by attachment and perforation, be emptied into intestine, bladder, or other organ. Such abscesses are far less serious than those which are found in the third group, where the appendix has no encasing lymph wall. In the former, or second group, although as already stated, pus has formed, it is completely encysted in a tumor, similar to such formations in the ovary or tube, with no special early symptoms necessarily indicating pus formation.

Third Group:—When in addition to the symptoms of appendicitis, those of a far graver nature appear suddenly, viz.; intense local, afterwards general, abdominal pain, marked tympanites, a fluctuating temperature, reaching 102° or even higher, with slight or decided rigors, moderate or profuse sweatings and prostration, there can be no question of the advent of acute perforation and abscess formation in close contiguity to peritoneal surfaces. In such cases where the patient, who has been apparently in perfect health, is suddenly stricken with such grave symptoms, indicating perforation—and I have seen a number of such—careful questioning always reveals the fact that the patient has had one or more attacks of appendicitis, but often so trivial as to be almost forgotten. The history of the former attacks, however slight, therefore, would clear the way for establishing a positive diagnosis.

Although it may be possible for inflammation and abscess to occur quite independent of the appendix in the pericæcal region, yet such instances must be exceedingly unusual. Several years ago (in 1886), I opened a supposed uncomplicated pericæcal abscess of large size; apparently there was no communication with the appendix or cæcum, the walls of the abscess seemed to involve only the connective tissues. The patient recovered, but subsequently suffered from attacks of pain in the same locality, which were then judged to be from a diseased appendix; suddenly, and nearly two years afterwards, the symptoms of perforative appendicitis and peritonitis appeared; there was no tumor, the ileo cæcal region being markedly tympanitic; section was promptly made, which discovered an abscess and commencing general peritonitis. The lymph exudation was recent, the original abscess walls had been absorbed, so that there was no protection to the general abdominal cavity. The appendix was found enormously enlarged and perforated; it was excised, and the patient has since married and has continued in perfect health. Had the second abscess not formed, the case would have been judged to be a simple pericæcal abscess. While there is every reason to believe that all acute abscesses in the appendix region are due to some lesion of this organ, there is no special reason for the occurrence of simple typhlitic abscess.

I repeat, that it is very doubtful if those cases of perityphlitic inflammation, which under appropriate treatment, go on to convalescence, are cases of inflammation purely of the walls of the cæcum, and connective tissue; such a condition possibly may occur, but it is more probable that in every case the irritation arises in the appendix, with more or less a local peritoneal inflammation. Then again, in every case in which I have excised the appendix for perforative inflammation, there has been a history of former attacks, the symptoms of which corresponded with those which some clinicians describe as indicating typhlitis. In order to determine the presence of an abscess cavity in the ileo-cæcal region, if the symptoms detailed would not be considered sufficient, rectal examination might be made, but I have never been in the slightest degree aided by this procedure.

DIFFERENTIAL DIAGNOSIS.

It, probably, is impossible to differentiate disease of the cæcum from appendicitis at an early state of the malady, as their relations are so close and they both give rise to similar local disturbance. Both organs are covered by peritoneum through a variable portion of their extent; both are liable to irritation, inflammation and perforation.

Perforation of the appendix is a very common accident, while the reverse is true with regard to the cæcum. Even in those cases where cæcal perforation has occurred, it is most likely the result of previous appendix perforation or disease.

One such case occurred in Pennsylvania, under the care of Drs. Rich and Sailor Brown, of Williamsport. I saw the patient in consultation. On the second day after the removal of the gangrenous appendix, fæces came from the wound, and upon careful inspection, two gangrenous perforations were found involving the cæcum. At the time of the appendix removal, the cæcum and colon were markedly impacted and discolored; the violent inflammation about the appendix had extended to and involved the intestine. The resulting gangrene was due in part to con-

tiguous inflammation and in part to impaction. But if this abscess cavity had been simply opened and the appendix not reached, the subsequent appearance of fæces would apparently have established the diagnosis of simple cæcal perforation, while the lesion of the appendix would have been overlooked.

The history of previous attacks of pain in any given case would establish the diagnosis between perforative cæcitis and perforative appendicitis in favor of the latter; at any rate, the necessity for operation being the same in both, the final diagnosis can be left until section has been made.

From Acute Intestinal Obstruction:—The symptoms in intestinal obstruction advance very rapidly, even more so than in appendicitis. In volvulus there is usually more severe pain, which is referred to the umbilicus. Intussusception is accompanied by frequent desire to stool and discharges of mucus and blood; an examination by rectum will probably establish the diagnosis, which also can be said of impaction. Finally, obstruction may be simulated by the attending peritonitis owing to the paralyzing effect on the bowels.

Strangulation of the bowels, intussusception, peritonitis, volvulus, generally come on very suddenly. Impaction of fæces, psoas or iliac abscesses or tumors, come on gradually. Cæcitis and perforative ulcer of the cæcum are also more or less rapid in their course, and point superficially more quickly than does the abscess to which appendicitis gives rise.

From Spinal or Perinephritic Abscess:—Attention to the history of the case and to the local signs of the disorder will enable us to diagnosticate these forms of abscess. The treatment being almost identical, at least as far as laparotomy is concerned, we need not waste time in making refinements of diagnosis, although the differential diagnosis can generally be made.

In psoas abscess difficulty may be experienced at times in differentiating it from pericæcal inflammation. But in the former there is generally dorsal pain and gastric irritation, and a history of long continued ill-health. Abscess from Potts' disease generally points to the groin, either just above or below Poupart's ligament. It also is associated with ill-health and difficulty in walking. In abscess of the right ovary and tube, the history and digital examination of the case would usually establish the diagnosis. An abnormal pouch or diverticulum of the ilium occasionally is found in the right iliac region, and might complicate the diagnosis, which could only be cleared up after section.

Tumors, both malignant and non-malignant, may be found in this region, but as a rule little difficulty need be experienced in clearing up any doubt. Their physical characters and clinical history are usually sufficient.

When pericæcal abscess points in an anomalous situation, all available diagnostic skill will be required to affect a diagnosis. Unlooked-for complications also may arise, which the surgeon must expect, and which he must always be prepared for. Some of the difficulties which occasionally confront us in making a diagnosis are well illustrated in the following cases:

APPENDICITIS; LATERAL SECTION; OPERATION COMPLICATED BY AN ENLARGED, ELONGATED GALL BLADDER; APPENDIX AMPUTATED, AND THE STUMP INVERTED INTO THE CÆCAL CAVITY. RECOVERY.

Mrs. E. S., aged 46, came under my care January 5, 1891, with symptoms of appendicitis which had existed for a week. Pain had been a prominent symptom, with elevation of temperature, abdominal distention, constipation, furred tongue, and persistent vomiting. Directly over the ileo-cæcal region there was a tumor which was slightly movable and exceedingly painful upon pressure. There had been no previous attack of pain in this region, no chill and no sweating. The symptoms pointed to irritation or inflammation of the appendix or pericæcal region, but not to abscess; but the presence of the tumor was very puzzling, and its character could not be made out. These were the symptoms indicating a first attack of mild appendicitis, and yet a large circumscribed tumor, painful to pressure, was likewise present; but the fact that this tumor was somewhat movable led to the view that it could not be connected with the appendix; at all events, it seemed proper to open the abdominal cavity, explore it, and examine the appendix, and then to be guided by circumstances.

A lateral section was made on the eighth day. Upon entering the abdominal cavity, the tumor proved to be an immensely elongated and distended gall-bladder, which was about five inches in length, lying directly above the appendix region, and in size and shape resembling a small banana. A careful examination of the liver failed to show the presence of any gall stones. The appendix was found greatly thickened, but free from adhesions. It had an extensive mesentery, which was ligatured and removed with the appendix. The stump of the latter was inverted, and invaginated into the cæcal cavity. The peritoneum was then brought over the inverted tissues by five sutures. The wound was closed with deep and superficial interrupted sutures; drainage was not used.

An excellent recovery followed, and the gall-bladder has apparently resumed its normal size.

Dr. Morris Longstreth, who examined the appendix, reports: "Great hypertrophy and thickening, especially of the mucous coat, and ulceration in two places, which appeared to correspond with the enlarged solitary follicles."

GANGRENE OF THE APPENDIX VERMIFORMIS, WITH NECROSIS OF MESENTERY AND ILIUM; PERICÆCAL ABSCESS WITHOUT SPECIAL SYMPTOMS. LAPAROTOMY. DEATH.

On Tuesday, March 6, 1890, in response to a telegram from Dr. Phillips, of Trenton, N. J., Dr. DaCosta and I visited a patient with him in consultation. The message stated that the case was one of volvulus, and requested me to come prepared to perform laparotomy. The patient, who was about 42 years of age, had been apparently in robust health, had remained indoors on the preceding Saturday. He had been constipated, for which a laxative had been given, but no relief was obtained. All efforts during the succeeding four days to procure an opening of the bowels signally failed. During this period there was no special symptoms except nausea, and occasional vomiting. After a careful and thorough examination, we were unanimous in the opinion that a positive diagnosis could not be made at that time. It was stated that there had been little if any pain in the abdomen, which was not abnormally distended; the temperature had been normal; there had been no chills or rigors; no acceleration of pulse; the principal symptom being simply a refusal of the bowel to respond to catbartics and enemata. There seemed to be more of a bowel paralysis rather than obstruction from twist or invagination. There was no symptom of peritonitis or other grave lesion of any of the abdominal contents. On inquiry, it was stated positively that there had never been any previous attack of pain in the appendix region. After a most careful consideration of the case, we were unanimously of the opinion that the idea of an operation could not at that time be entertained, and was not justifiable, but agreed that calomel should be administered in fractional doses, $\frac{1}{10}$ of a grain every half hour, with an occasional dose of podophyllan, and as much nourishment as possible.

On separating it was understood that we should hear, promptly, if there was any unfavorable change. Early the next morning Dr. Phillips telegraphed: "Treatment agreed upon yesterday has been carried out; general distress and distention increasing; strength is less, temperature sub normal. I think, as does the patient, that the operation should not be deferred." Upon my second visit, I found the patient with marked hiccough, and an irregular feeble pulse with slight abdominal tension, and no marked pain. There had been no movement of the bowels. The belief that some grave lesion existed, was warranted by the prostration, the sub normal temperature, the weak pulse and the loss of strength, but there was no evidence of peritonitis, local or general. In other words, the symptoms were negative, and it was impossible to clear up the diagnosis even at this time. Although the patient was in an exceedingly grave condition, I quite agreed with Dr. Phillips that an exploratory operation was justifiable. Ether was administered, a two inch incision was made in the median line, and an exploration was made with the finger. To the left of the umbilicus, and extending from just above to just below its level, was a mass of collapsed intestines, but nothing abnormal was found, except slight distention, in any portion of the abdomen until the exploring finger was carried deeply into the right iliac fossa, where it plunged into a very foul abscess, and pus flowed freely from the wound. The incision was then considerably enlarged. In this cavity was found an enormous appendix vermiformis, inflamed and gangrenous in places which was ligated and cut off. The boundaries of the pus cavity comprised the under surface of the cæcum and ascending colon, iliac fossa, mesentery and portions of the small intestine. The portion of the wall made up of mesentery, was necrotic for quite a distance at or very near its root, and the ilium was covered with lymph, and for some inches showed structural change. The sloughing portions separated as soon as touched and bled vigorously. The bleeding vessels were taken up by ligatures, in part individually, and in part *en masse*. Evisceration had been necessary to get at and tie off the appendix. The intestines were now, with some difficulty, returned and the abdominal cavity thoroughly washed out. A glass drain was carried deeply into the pelvis, and the parietal wound sutured.

It was expected that extensive necrosis of the intestine would occur, if it had not already started, because of the condition of the mesentery. No other operative resource seemed possible in this most desperate case.

The presence of such serious disease was a matter of profound surprise, and was totally unexpected, for none of the symptoms pointed to the existence of such a complication, and the diseased conditions could not possibly have been diagnosticated by the symptoms. It is most extraordinary that such destructive changes could have existed without symptoms indicating such lesions, and I know of no instance, in my experience, where such disease existed without equally positive symptoms. The only symptoms which heralded the grave condition, subsequent to the visit of Dr. DaCosta and myself, were those already alluded to, viz.; the hiccough, irregular pulse, sub-normal temperature and failure of strength.

Subsequent to the operation there was a marked improvement in every respect; this was due to the removal of the purulent matter, and foul contents of the abscess cavity, while the fatal result which took place two days subsequently was due to exhaustion incident to the gangrene.

The question was raised at the time, whether or not, if the operation had been performed on the day Dr. DaCosta and I saw the patient, the result would have been different. To this I replied, that after the most careful consideration it was agreed that the safest course was to wait; that the diagnosis of volvulus and intussusception was abandoned, as well as peritonitis; of the latter, indeed, there was not a symptom present. Indeed, had laparotomy been performed twenty-four hours earlier we would have found almost precisely the same fatal conditions, for such extensive disorganization is of slow and not so rapid growth. Dr. DaCosta, having read this report, has written: "I have read the above and concur entirely; no earlier operation could have had a different result."

In reviewing the history of this case, I am at a loss to be able to see in what way a diagnosis of such a condition could be made; for it seems almost impossible that with inflammation, abscess, obstruction of the bowels, from lymph and gangrene, there should not have been some positive symptoms. On making further inquiries subsequent to the operation, it was stated by a member of the patient's family, that about two years before, the patient had a serious but brief attack of pain in the appendix region, which was not relieved until after the administration of a hypodermic of morphia; so that, unquestionably, the appendix had during this time been diseased, and was the cause of the fatal attack. Had the fact of a previous attack of pain in the ilio-cæcal region been known prior to the operation, it would have been sufficient to elect a lateral instead of a median section, but at the time we were called to the case, it would not have made any difference in the ultimate result.

PROBABLE PERFORATIVE APPENDICITIS; ABDOMINAL TUMOR SUPPOSED TO BE MALIGNANT; EXPLORATIVE LAPAROTOMY; DIAGNOSIS OF MALIGNANT DISEASE RE AFFIRMED; SUBSEQUENT DISCHARGE OF AN ABSCESS INTO THE URINARY BLADDER; CLOSURE OF FISTULA. RECOVERY.

On the 23d of last June, Mr. T. H. W., aged 33, from North Carolina, came under my care, as a private patient, in the Orthopædic Hospital, with the following history.

About six months previously, or just before Christmas, in 1889, he first had pain in the lower abdominal region; more frequently at night, and was very constipated. The pain lasted about ten days, then gradually subsided, and during this time he was obliged to lean forward in walking, owing to a sense of drawing. About the 25th of April following, when in Scranton, Pa., after feeling poorly all day, he experienced a very severe attack of pain in the lower abdominal region, which lasted for many hours, and was only relieved temporarily by opium and hot applications. Two days later, although very weak, he went South. On the journey he had a very severe chill, which was followed by fever and pain, the latter continuing all the time; his temperature ranging from 100° to 101°; at the end of ten days he was compelled to go to bed, blisters were applied on account of pain. A hardness and swelling now appeared somewhat to the right of the median line, but below the umbilicus. The diagnosis of local peritonitis was then made; mercurial ointment was applied (which subsequently caused salivation), and low diet ordered. His temperature ranged from 96° to 102°. His condition finally became so alarming that he concluded to come North. On the way up, he consulted Dr. Hunter McGuire, at Richmond, Va., who suspected an abscess and suggested the use of the exploring needle. This was declined, and he reached Philadelphia on June 16th. He was admitted to the Pennsylvania Hospital under the care of Dr. Ashhurst, who diagnosticated carcinoma of the omentum and bowel. After remaining a week in that institution, he placed himself under my care, as a private patient, and entered the Orthopædic Hospital.

At this time I found him emaciated, with great loss of strength, a temperature not much above 100°, but fluctuating. On examination I found marked hardness of the tissues in the anterior belly wall, a considerable tumor which extended from just below the umbilicus to the bladder region, situated over the right iliac region, but not completely. The tumor was hard, more or less irregular, and painful to deep pressure.

The history of the case was that of local peritonitis, and the symptoms pointed to deep abscess, yet as the more marked hardness and tumefaction was confined to the central abdominal region, the question as to the appendix being the source of the trouble was held in abeyance. Hot fomentations were applied, and large amount of milk, nutritious foods and stimulants were ordered.

A few days later I left the city for a trip to the Pacific Coast. During my absence the patient had another acute attack of pain, with marked fever; the only comfortable position he could secure was with the knees drawn up and his body bent forward. Dr. Agnew was called in, who confirmed the diagnosis of malignant disease. After a residence of three weeks in the hospital the patient went to Scranton, and was under Dr. Logan's charge. He subsequently got very weak, his temperature ran high, his pain was severe, and there was progressive loss of flesh. On August, 3 Dr. Mordecai Price visited the patient at his home, and an exploratory abdominal incision was made; the intestines and omentum, it is stated, were found matted together by what was pronounced to be carcinoma, and the opinion

was given that he would probably not live through the month. For a week the patient was in a bad condition, chiefly due to obstinate constipation, high temperature, severe pain. Three days after the operation he passed per urethram, what seemed like the "stem of a water lily," of a reddish black color (probably a blood clot). He had great burning at the end of micturition, and the urine had a foul odor and contained pus. At times, subsequently, the amount of pus was one-third of the urine passed; gradually the pus disappeared and the urine apparently became normal, of natural odor and color, and would so continue for periods varying from five days to two weeks, the latter being the longest interval. It was very noticeable that when the pus was not discharged from the bladder the patient's temperature increased and general symptoms were less favorable. He frequently passed in the urine, masses of brownish or slate colored tissues in a state of decomposition. This continued right along until early in December, although he gained some 15 pounds in weight, when I visited him at his home in Glenburg, near Scranton. He was then in bed and passing large amounts of pus with the urine; and then, for the first time, considerable gas escaped by the urethra, especially at the close of urination. On further examination, I found that subsequent to the exploratory laparotomy and the discharge of pus, that the tumor or hardness of the abdominal wall gradually lessened, and finally disappeared, with the exception of a slight hardness which led from the bladder region to the right iliac region. A careful survey convinced me that the patient was the subject of a fistula which had extended from the appendix, that this organ had been originally inflamed, had become surrounded by lymph, had subsequently perforated when abscess formed, that the adhesions had taken place with the abdominal wall, and finally the pus track led on to the bladder, into which an opening took place, through which the abscess contents, pus, foreign matters, and gas were discharged. The patient was placed on milk, with directions to increase the amount to three quarts daily, also extract of malt and as much nutritious food as could be digested. When his condition warranted, I advised that he should come to Philadelphia for a section and removal of the appendix. His condition after this improved rapidly, no further abscess appearing. He came again to the Orthopædic Hospital on December 27. From that time, however, he improved rapidly, gaining nearly a pound a day, and was soon able to walk out. The hospital record states: "The abdomen is neither scaphoid or prominent; below the cicatrix of operation and towards the pubes there is some slight but deep induration, but no tenderness." Urine was examined and found to be normal. It seemed reasonable that with the improvement of health the fistulous track might have closed naturally, so that on January 12, after a short residence in the hospital he was discharged apparently cured, with the understanding that should any further evidence of the trouble appear, the source of it should be investigated and eliminated by abdominal section. He is at this time apparently quite well.

The following case illustrates the grave danger which arises from bands of lymph adhesion, which are liable to be thrown around the appendix as a result of repeated attacks of appendicitis. Such adhesions may prevent the surgeon, at the time of the operation, finding the perforated organ, which not being removed, is likely to give rise to fæcal fistula; and I have seen several such cases.

PERICÆCAL ABSCESS; LAPAROTOMY; ADHESIONS; APPENDIX NOT DISCOVERED; RECOVERY WITH FÆCAL FISTULA; FIVE MONTHS LATER ABDOMEN RE-OPENED, FISTULA FOUND AND CLOSED; RECOVERY.

George I., aged 30, a patient of Dr. Benj. F. Butcher, of Philadelphia, was admitted into the Pennsylvania Hospital, May 12, 1890, in an exceedingly prostrated condition, with a history of former attacks of pericæcal inflammation, the last being followed by symptoms indicating perforation of the appendix and abscess.

The attack came on suddenly, with pain in the appendix region, which was greatly increased by pressure; there was nausea, fever and constipation; later on there was a sudden accession of intense pain with deep swelling, and general abdomen tenderness and tympany; a fluctuating temperature, chills and profuse sweatings. The skin over the ileo-cæcal region became discolored, somewhat œdematous, but no distinct tumor could at any time be felt, yet there was some hardness of the deep tissues.

Such was the condition in May, 1890. A lateral incision was made directly over the region of the appendix, which exposed a large abscess cavity containing fœtid pus; careful search failed to discover the appendix, but the surroundings were so matted together by adhesions that further exploration was not deemed prudent. It was supposed that the entire appendix had sloughed from the violence of the inflammation, which had doubtless resulted in gangrene of the entire organ.

The abscess and abdominal cavity were thoroughly washed, and two drain tubes were inserted, one of glass to the bottom of the abdominal cavity, the other a rubber tube into the most dependent part of the abscess cavity. A rapid recovery followed, but a fistulous opening remained which now and then discharged excrementitious matter, showing that an opening existed into the intestine, which was probably at site of appendix.

In October, I made a second section, for the purpose of closing the fistula. The incision was made directly in line with that of the first operation; on reaching the cæcum it was found that all the adhesions which were present at the first operation had been absolutely and completely removed. The cæcum was now readily manipulated, and it was found open, as supposed, at the site of the appendix, which had unquestionably sloughed off; the fistula was of sufficient size to admit the end of the little finger. This was closed with nine Lembert sutures; recovery was rapid and perfect.

As a result of repeated attacks of appendicitis extensive adhesions may surround the intestines also and cause fatal obstruction, as illustrated in the following cases:

PERICÆCAL ABSCESS. OPERATION REFUSED. PLASTIC PERITONITIS. DEATH.

In the spring of 1890 I saw, in consultation with Dr. Trautman, of Philadelphia, a young man of 28 years of age, who had been confined to bed for a week, with all the symptoms of violent appendicitis. There was no defined tumor, but indistinct local hardness and general tumefaction. Temperature slightly raised; there was constipation, and pain, which was marked, was increased on pressure. There was also a history of several, perhaps three, former attacks, but not so severe as this one. I advised a lateral section and removal of the appendix, which sooner or later, I judged, would perforate and probably excite general peritonitis. The patient declined the operation. He subsequently had two attacks, in May and July.

Early in the following fall, the patient sought admission into the German Hospital. It appears that he was then suffering from another attack similar to the one in which I saw him. The trouble was at first supposed to be a retro-peritoneal sarcoma; then it was taken to be chronic peritonitis. He died of exhaustion, with symptoms of obstruction. The autopsy revealed an extensive, adhesive, or plastic peritonitis. The intestines, stomach, liver, spleen and bladder were so united as to form one huge mass, which, when loosed along the vertebral column, was lifted out entire; the appendix, which was undoubtedly the source of the trouble, was found firmly adherent to neighboring loops of intestine, with much inflammatory tissue.

The following case occurred very recently:

OBSTRUCTION OF THE BOWELS, PERSISTENT VOMITING. PURULENT PERITONITIS; SECTION; EXTENSIVE ADHESIONS FROM PREVIOUS ATTACKS OF APPENDICITIS; GANGRENE WITHOUT PERFORATION OF THE APPENDIX; DEATH ON THIRD DAY.

Mr. J. E., 32 years of age, living in Philadelphia, on January 21, 1891, was awakened early in the morning by violent pain in the abdomen, referred to umbilicus and right inguinal region, with persistent vomiting. Bowels constipated, but had a small passage on the 20th. He had a similar attack last October, while away on a hunting trip, by which he was confined to bed for seven days. He then returned to his home, and was confined to his bed for some time with similar symptoms, from which he gradually recovered. In December he had another attack. He stated, however, that he occasionally had pain in the appendix region, especially when stepping out of his carriage or when his body was jarred, impressing him with the fact that everything was not right. He had had a similar attack in 1887. I was called in on January 22, by Dr. Woodbury, who had first seen the case the day before and had given him a cathartic and large enemata, without succeeding in evacuating his bowels. (His family medical attendant, Dr. Hetzel, was present, and agreed with us as to the necessity of laparotomy.) The operation was performed the same afternoon, by lateral incision. Pus escaped from the peritoneal cavity, showing commencing general peritonitis. The appendix, which was firmly adherent its entire length to the cæcum, was found with some difficulty. It was gangrenous, and tore while being examined. A ligature was thrown around it near the cæcum, and the very large, swollen organ removed. It was the largest I have ever seen. A glass drainage-tube was introduced deep into the pelvis, and small doses of calomel and soda given to check vomiting and move the bowels. There was so great prostration that further examination of the condition of the intestines could not be made. The pain and other symptoms of peritonitis immediately ceased and did not return, but the bowels could not be made to move. The patient vomited all nourishment, even water, and died exhausted on the evening of the 24th day of January.

The several attacks of peritonitis had resulted in general plastic exudation of the bowels, which caused the fatal obstruction—the final abscess, due to gangrene of the appendix, being only an incident in the final result. The operation should have been performed at an earlier period in the history of the attacks and before the occurrence of the extensive adhesions, when the disease was simply appendicular.

PART II.

TREATMENT AND TECHNIQUE OF OPERATION.

First Group: The treatment of the first group of cases, the irritative, catarrhal, or simple inflammatory disorders of the cæcum and its surrounding, or of the appendix, should consist in absolute rest in bed, the application of hot poultices or fomentations, perhaps local depletion, and possibly the hypodermic exhibition of morphine to control pain. The bowels should be kept open by the administration of calomel, or salines and enemas.

The diet should be restricted to nourishing liquids.

Second Group: In this variety of cases the disease is no longer simply irritative, catarrhal or inflammatory, but there is ulceration, with impending perforation, if the latter has not already occurred. Lymph, as a result of the violence of the disease, has been thrown out, which has either partially or completely enveloped the appendix, or this lymph exudation may have formed a wall sufficient to protect the general abdominal cavity when perforation and abscess have occurred. Perforation means pus and abscess; the diagnosis, therefore, of such a condition calls at once for abdominal section and removal of the appendix.

In a paper which I read more than a year ago, before the College of Physicians of Philadelphia, on inflammation of the vermiform appendix, I stated that "when the abdomen is believed to contain pus, whether intra- or extra-peritoneal, encysted or diffused, the rule of surgical procedure now is to make a section, remove the offending organs or the sloughing tissues of pus, thoroughly cleanse the surroundings and drain." This rule still holds good, and is being constantly followed with the happiest results.

The risks of operation at this time, are much less than those which threaten the patient. Early interference will save most if not all cases, while the danger of operation is slight as compared with that of general abdominal inflammation. The surgeon should never be satisfied in merely opening the abscess, which is simply a result, and not the cause of the trouble; if this only is done, the operation is incomplete, and at any time may have to be repeated.

Third Group: Here we have sudden perforation or sloughing of the appendix; in these cases there is no lymph wall separating the pericæcal surroundings from the general abdominal cavity, nor has the appendix been enclosed in lymph exudation—so that when the perforation occurs, the sloughing tissue, pus, and contents of the appendix are at once brought in contact with the general peritoneum.

The symptoms are at once profoundly grave, indicating general peritonitis and early collapse. Immediate section, removal of the appendix and cleansing of the abdominal cavity and contents, is demanded.

It is hardly necessary to say that the usual precaution in regard to cleanliness and rules of strict antisepsis should be observed. Generally, from the very nature of the case, there is but little time for any special preparatory treatment, prior to the operation.

OPERATION.

In my papers on the treatment of pericæcal inflammation, read before the Philadelphia County Medical Society, in December, 1889, and again in January, 1890, before the College of Physicians, I stated that the line of abdominal incision should be lateral, and not median. The reasons for this statement are very obvious and positive; for, if the median incision be made, the peritoneal cavity would often be needlessly opened, while the cæcum and appendix can not be well reached or dealt with through it. But if the lateral incision is done, it can be made of less size, more circumscribed, and all the necessary manipulations can be made upon the cæcum, appendix, and surrounding parts without necessarily opening the peritoneal cavity. Should the abscess have reached the cavity of the peritoneum, the intestines can just as well be examined and cleansed through a lateral as a median incision. The incision should ordinarily be from three and a half to five or six inches in length. Starting from about an inch or so above the middle of Poupart's ligament, and to the outer side of the right line a semi-lunaris, it should extend upward and outward and directly over the appendix region, and be continued down until peritoneum, cæcum, or pus cavity is reached. The normally placed appendix, as I first pointed out, can always be found immediately under a point two inches distant from the right anterior superior spinous process, on a horizontal line drawn from this process towards the median line of the body. In some cases where the peritoneum is reached, its discoloration shows that it covers a pus cavity; in others, after the peritoneum is opened, not only pus but a lymph tumor enclosing the appendix, is found; this mass must be opened before the organ be dealt with.

Occasionally, when the abscess is cleansed, the appendix will be seen loosely floating, but frequently it is more or less attached to the cæcum, sometimes firmly fastened to it and detached with difficulty. Now and then it has a mesentery of its own, which may extend its entire length; this must first be tied in sections and then cut away: the appendix is then ligatured with catgut, or silk, close to its cæcal attachment and cut off. There is no advantage in invaginating the stump; in most cases, indeed, this treatment would really be impossible on account of the swollen, infiltrated and unyielding condition of the organ. In such cases there is no reason why the ligatured stump should not be allowed to project from the cæcum. The abscess cavity must slowly fill up and close by granulations. If the general peritoneal cavity has not been involved, the abscess walls and surroundings need only be washed out with hot water (or with 1 to 2,000 mercuric solution). If the appendix has sloughed, or even simply is perforated, search should be made for any foreign body, and all sources of further trouble gotten rid of. A glass drain should be placed in the most dependent part and the wound closed with a few stitches. Very commonly, however, the peritoneum is

found invaded by pus, so that the whole abdominal cavity needs to be thoroughly drenched with hot distilled water (105° to 110°). In such a case even greater care should be taken to find any foreign body which may have escaped from the appendix.

When the general cavity has been involved, a glass drain must be carried to the bottom of the pelvis in the hollow of the sacrum, a large rubber drain should also be placed in the superficial or cæcal abscess cavity.

The post-operative treatment is simple; it consists in the hypodermic use of small doses of morphia to relieve pain, while the ordinary rules of abdominal surgery are to be observed. No food need be given, by mouth, for the first twenty-four hours, or even longer. Nutritive enemata of beef tea, with or without whisky, can be administered every three hours with advantage. The bowels should be opened as early as possible, and for this purpose, small doses of calomel, one-sixth or one-tenth of a grain should be given half hourly, with an occasional one-eighth or one-tenth grain dose of podophyllin. When the bowels have acted, they should be kept in a fairly soluble condition by salines; even threatening peritonitis should be met by saline purgation.

The drain tubes may be removed as soon as the discharges are perfectly sweet, and reduced to a minimum. After recovery, the site of operation should, for a time, be supported by a flat, thin buckskin pad, kept in position by a broad band around the body, in order to avoid the occurrence of hernia.

PROPHYLACTIC TREATMENT.

This paper would be very incomplete, and I should not do justice to the subject, if I close my remarks without referring to the mooted question of the removal of the appendix in the interval between acute attacks. In fact, I have long urged, indeed from my first writing on this subject, that recurring attacks of appendicitis should be an absolute indication for the removal of the appendix at this most convenient time. When we remember that the appendix, which has been the subject of former attacks of disease, is liable at any time to be involved in that most dangerous of acute affections, perforation of the organ and pericæcal abscess, and when such a seizure may take place where adequate medical skill cannot be had, it seems much safer to avoid the possibility of future trouble from this source, by getting rid of the appendix when its surroundings are free from active irritation. Objection is made, and very naturally, to such a radical operation as excision of the appendix, especially when the patient is in a favorable condition or has apparently recovered.

If, however, health has become impaired by one or more attacks of mild or serious seizures, and if these attacks have increased in frequency, severity, or duration, the removal of the organ is clearly indicated. The premeditated operation permits the careful preparation of the patient The incision should be made in the same line as previously described, but it need not be more than three inches in extent. All bleeding points should be ligatured with fine catgut, when the peritoneum is reached, and after the wound is quite free from blood or other fluid, the peritoneum is incised. The omentum or intestine will then present itself in the wound; rarely will the appendix be seen until the bowel is pressed aside to the right with the finger. It may be found partially or entirely attached to the cæcum or elsewhere; if so, the adhesion may be separated by the finger, and divided between double ligatures. The appendix may be quite free from mesentery, or, as I often observed, it may extend throughout its entire length; should this be the case, the meso-appendix is ligatured in portions and then cut through between the ligatures and the appendix; the latter is then cut off near its cæcal origin. If the stump be permitted to remain projecting from the cæcum, free it must be included in a ligature, and its extremity covered by peritoneum.

I originally, in 1889, called attention to the fact that the stump of the appendix could be readily inverted and completely invaginated into the cæcal cavity, hence all danger from it could be gotten rid of. The manipulation consists in grasping the stump with a forceps or probe, and pushing it into the cæcum; the peritoneum is then approximated over the inverted stump by four or five sutures, which retain it in the cæcum, and effectually prevent its subsequent prolapse. This having been accomplished, the peritoneum is then brought together by a row of interrupted deep sutures, and also the external muscle and skin. Drainage could only be required in very exceptional circumstances. The after treatment is simple; the bowels having been well opened before the operation, need not be disturbed for several days; the dressings may go untouched for a week or even longer, when the sutures should be removed.

IN CONCLUSION.

I have thus gone over, somewhat briefly, the subject of this paper, and have also presented some of the difficulties which I have experienced; such difficulties, however, can generally be overcome. The key to the situation is the diagnosis, which should lead the way to prompt surgical treatment; and finally, if I have not presented anything specially new or interesting, I hope at least that the discussion of such an important subject will prove to be not without some practical value.

THE ELECTRICAL TREATMENT OF FIBROID TUMORS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5-8, 1891.

BY G. BETTON MASSEY, M.D.,
OF PHILADELPHIA, PA.

The progress of the Apostoli method of treating fibroid tumors of the uterus, presents both analogies and contrasts to those of some of the recent therapeutic claims that have been widely investigated by the medical world. Recognized at last, owing to the persistent agitation of its originator, it was, like the Brown-Séquard and Koch theories, enthusiastically adopted by those pioneer advocates who often make up for crudeness of training, and inexactness of observation, by a debt of stimulated progress laid upon subsequent workers. In contrast to the theories alluded to, it has since borne the test of capable experiment to an extent that even exceeds the original claims, and with the broadened use of electricity in other allied conditions, has made a new departure in gynecology. Unlike them also, it has encountered an opposition of unparalleled fierceness, an opposition, however, that has been as healthy as it has been fierce. The cause of this unusual attitude towards a new remedy is easily seen in the recent extension of abdominal surgery, and this highly favored disease has, therefore, been treated to a rivalry of methods that cannot be other than productive of the best results. Far from regretting this rivalry, I indeed point to it as an important index of medical development, and cannot but regret that other therapeutic efforts, now blindly accepted, are not subjected to similar tests. I do regret the intemperate statements of certain extreme opponents. Undermined in their wholesale and indiscriminate resort to dangerous operations, by the attention bestowed upon a milder and non-dangerous method of enforced atrophy, they have been invariably the aggressors in controversy, condemning in unmeasured terms a method of which they knew nothing. This is in striking contrast to the position of many electro therapeutists, who willingly concede to surgery, certain cases unsuited to electrical treatment, yet demanding active help.

Experience is alone the final arbiter, and in view of the many cases of symptomatic cure and reduction, and the considerable number of those that have completely disappeared under electrical treatment, now on record, it is in order for those who advocate an exclusively surgical treatment to come forward, not with wet specimens just removed from patients who may die subsequently, nor even mere reports of deaths and recoveries from the operation, but with full reports of the ultimate results of each case that withstood the operation of oöphorectomy or hysterectomy. The profession is not simply interested in the average mortality of these operations for comparatively benign tumors, but wishes to know also the results in the restoration of health and comfort to these patients. For instance, some careful operator should tell us how often removal of the appendages for bleeding myomas fails to control the hæmorrhages; how often this procedure in patients approaching the menopause is followed by mental disturbances; how often a successful hysterectomy is followed by abdominal fistulas, intestinal adhesions, hernias, and other sequlæ that are as troublesome and painful to the patient as the benign tumor itself? Until such statistics are collected there can be no true comparison of surgical and electrical methods, as the latter refers only to results that are always more or less remote from the remedial procedures.

As an illustration of the results of the electrical treatment of these growths, I have arranged in a tabular form the histories of forty-six consecutive cases treated by myself, giving concise statements of the conditions present at the beginning of treatment, the nature of the applications, and the results as ascertained at various periods after the cessation of treatment.

An analysis of this table will show that seven cases should be eliminated from consideration in this paper, because two cases (Nos. 37 and 46), were polypoid, and their delivery was merely assisted by the electrical applications made, and five cases (Nos. 2, 14, 18, 21, 45), were treated for so short a period that it is impossible to use them in demonstration.

The remaining thirty nine cases had more or less thorough treatment, and in the matter of results attained are divisible into five classes:

Class 1. Cases of complete anatomical and symptomatic cure, the tumor disappearing and the patient being restored to health. Of this class there were five (Nos. 7, 17, 20, 22, 24).

Class 2. Cases in which the tumor was considerably diminished in size and all other symptoms were cured. Of this class there were twenty-three (Nos. 1, 4, 5, 6, 8, 9, 11, 15, 16, 19, 27, 28, 29, 30, 32, 34, 35, 36, 38, 39, 40, 41, 42).

Class 3. Cases in which the tumors were not diminished in size, but all the symptoms were relieved. Of this class there were eight (Nos. 10, 13, 23, 25, 26, 31, 43, 44).

Class 4. Cases in which the tumors were not diminished nor the symptoms relieved. Of this class there were two (Nos. 12, 33).

Class 5. Cases made worse by the treatment. Of this class there was but one (No. 3).

PERCENTAGES.

Based upon the thirty-nine cases of thorough treatment, therefore, it will be seen that 12.8 per cent. resulted in complete cure and disappearance

HISTORY OF FORTY-SIX CASES TREATED BY ELECTRICITY. By Dr. G. Betton Massey.

No. of Case.	Description of Growth.	Age of Patient.	Known Duration of the Growth.	Clinical Symptoms.	Method of Treatment.	Total Duration of Treatment.	Results.	Time after Cessation of Treatment, when results were Verified.
1	Sub-peritoneal, loosely attached hard growth, size of goose-egg, accessible through right vault of vagina.	45	4 years . .	Pressure on bladder and menorrhalgia.	Buried puncture—60 to 200 ma. four times at intervals of a week.	1 month. .	Complete relief of all symptoms and reduction of growth about one-third.	3 years.
2	Intra-mural and sub-periton'l multinodular growth filling abdomen to four inches above umbilicus.	47	20 years. .	General pressure symptoms and impairment of health.	Intra-uterine — 100 to 200 ma. eight times daily.	12 days . .	Temporary aggravation of the pain due to frequency of treatment; subsequent improvement.	1 year.
3	Sub-mucous, sessile fibro-cyst, enlarging uterus symmetrically to size of 7th month of pregnancy.	49	5 years . .	Bloody and watery discharge, pain, and general impairm't of health.	Intra-uterine—and plus 25 to 300 ma. every other day until os dilated and tumor presented.	3 months .	Septicæmia occurred during expulsion of tumor, followed by death on the twelfth day.	
4	Sub-mucous, sessile polyp, of small size. Uterus hypertrophied; cavity four inches.	38	2 years . .	Pain and purulent leucorrhœa . .	Intra-uterine—and plus 40 to 150 ma. ten applications.	3½ months.	Relief of symptoms, reduction of tumor to a nodule, and of uterus to normal size.	
5	Intra-mural, multinodular growth, filling abdomen and extending two inches above umbilicus.	38	2 years (?)	Profuse and hastened periods; severe pain and difficult locomotion.	Intra-uterine plus and — 65 to 150 ma., at intervals of week or more.	4½ months.	Symptomatic cure, restoration of menses to normal, and reduction of growth to two inches below umbilicus (about one-third).	1¾ years.
6	Sub-peritoneal and intra-mural multinodular growth, extremely hard, filling pelvis and lower third of abdomen.	41	12 years. .	Constant pain, aggravated at periods which were of two-week type and profuse. Offensive purulent leucorrhœa.	Intra-uterine, 60 to 200 ma.—twice weekly; later, once weekly.	9 months .	Arrest of all pain and discharge; reduction of tumor about one-fourth, and restoration of periods to 28-day type.	2 years.
7	Intra-mural growth, filling pelvis, with sub-peritoneal projection reaching the crest of the ilium.	34	9 months .	Constant pain in left groin, and on walking, with profuse purulent leucorrhœa.	Intra-uterine—50 to 150 ma. twice a week.	8 months .	Disappearance of tumor and of all symptoms, and reduction of uterus to normal size. Bands of adhesion left.	1 year.
8	Intra-mural, symmetrical fibroid of large size, wedged in pelvis, and extending to umbilicus.	40	1½ years. .	Severe pain, inflammatory attacks, Pressure symptoms and impairment of health.	Intra-uterine—80 to 250 ma. every other day, and later every fourth day.	5 months .	Quick release upward into the abdomen, with improvement of health; subsequent reduction to two inches below umbilicus (⅓).	2¼ years.
9	Intra-mural nodule, 2 inches in diameter in posterior wall of retroflexed uterus.	42	1 year. . .	Pain and other pressure symptoms, with menorrhagia and profuse purulent leucorrhœa.	Intra-uterine—50 to 125 ma. twice weekly, with intervals of non-attendance.	4 months .	Symptomatic relief and considerable shrinkage.	3 months.
10	Intra-mural growth, size of small orange, in retroverted uterus.	33	2 months .	Flooding two weeks at each period, with constant pressure symptoms.	Intra-uterine plus 25 to 100 ma. twice a week, with intervals of non-attendance.	8 months .	Menstruation regular, lasting five days. Pressure symptoms relieved; no note of change of size.	
11	Intra-mural growth, size of fist, in right side of fundus; cervix elongated; syphilitic history.	30	1 year. . .	Hæmorrhages at periods which are irregular and frequent; profuse leucorrh. and painful locomotion.	Intra-uterine plus 35 to 100 ma. once a week, with intervals of non-attendance.	6 months .	Menstruation regular and painless; relief of pain and slight reduction in size.	
12	Two sub-peritoneal pediculated growths, sizes of large orange and lemon, separately attached.	36	1 year. . .	No Symptoms.	Intra-uterine, 30 to 50	3 months .	No change	3 months.
13	Sub-mucous fibroid, size of large adult head, attached by broad base. Os admitttng two fingers; growth rapid.	48	6 years. . .	Continuous hæmorrhages, with pain and impairment of health.	Intra-uterine plus and — 70 to 250 ma. every third day.	2 months .	Arrest of bleeding and menstruation for 3 months. Subsequent history unknown.	
14	Intra-mural fibroid, size of small lemon, in anterior wall. Perimetric adhesions.	25	2 years. . .	Irritable bladder, pain in back and difficult locomotion.	Intra-uterine—35 to 50 ma. twice a week.	1 month .	Relief of symptoms; no record of change in size.	
15	Intra-mural, size of lemon, in posterior wall of retroflexed uterus. Tumor in Douglas' pouch.	40	3 years . .	Severe pain, pressure, profuse bleeding, menorrhagia and profuse leucorrhœa. Menstrual type, 21 days.	Intra-uterine plus 50 to 125, twice a week.	2½ months	Arrest of hæmorrhage, restoration of menses to 28-day type, and slight reduction in size.	1 month.
16	Intra-mural growth filling pelvis. Uterus retroverted. Syphilitic history.	28	3 years . .	Hæmorrhagic periods and constant pain.	Buried puncture—200 ma. three times, and intra-uterine plus 50 to 100 ma. once a week.	6 months .	Relief of pain, regulation of menstruation, and considerable reduction in size.	6 months.
17	Intra-mural growth, filling pelvis and extending above level of upper spines of ilium.	34	2 years . .	Profuse hæmorrhage and impairment of health.	Intra-uterine plus 60 to 110 ma. twice a week.	2 months .	Total disappearance of tumor. Uterus normal in size. Hæmorrhage arrested. Menstruation normal.	3 months.
18	Intra-mural growth, the size of an orange, in anterior wall.	23	Unknown.	Excessive menorrhalgia and anticipated periods. Very tender in hypogastrium.	Intra-uterine plus and — 30 to 70 once per week.	1 month .	No record. Case lost sight of	

19	Sub-peritoneal nodular growth, filling abdomen and extending to ribs. Treatment confined to a nodule in Douglas' pouch.	50	14 years. .	Pressure symptoms, affecting rectum and bladder especially.	Puncture plus and — 50 to 100 ma. to depth of half an inch, six times.	1 month .	Nodule in Douglas' pouch smaller and flatter. Pressure symptoms lessened and bowels move more freely.	
20	Intra-mural enlargement of fundus of uterus to a size that fills the pelvis. Multinuclear, firmly adherent. Cavity, 3½.	30	6 years . .	Hæmorrhagic periods, twenty-one-day type, with menorrhalgia and tenderness.	Intra-uterine plus 60, followed by neg. vag. 40. The first treatment caused prolonged hæmorrhage and pain.	1 month with interval.	No sign of tumor except lumps in tubal region. Uterus normal in size and movable; no pain. Periods regular.	1 month.
21	Intra-mural, globular fibroid, size large cocoanut, in posterior wall. Cavity, 4 in.	40	2 mos. (?) .	Constant hæmorrhage and pain. Bladder irritable.	Intra-uterine plus 30, four times.	1 week. . .	Disappearance of pain.	
22	Intra-mural growth, size of goose egg, in left wall, extending above level of true pelvis	40	1 year. . .	Pain, fever, irritability of bladder, and irregular menstruation.	Intra-uterine plus 30 to 60 ma. five times.	1 month .	Complete disappearance of projection and symptoms.	1½ months.
23	Intra-mural growth in anterior wall, size of small cocoanut, rising to the upper level of iliac bones. Cavity, 4½ in.	45	Unknown .	Hæmorrhage and pain.	Intra-uterine plus 20 to 80 ma., six times.	2 months .	Hæmorrhage arrested by first application. Subsequent relief of pain. No record of change of size.	
24	Intra-mural growth posterior and to left. Whole mass size of goose egg. Cavity, 3½ in.	41	2 years. . .	Immense loss of blood at periods, which return in 21 days Pain and tenderness. General health impaired. Profuse leucorrhœa.	Intra-uterine 100 plus to 15 ma., twice a week, later once a week.	3½ months	Complete disappearance of growth, the cavity shrinking to 2½ in. Periods normal, without flooding or pain.	2 years.
25	Intra-mural growth in anterior wall, nearly filling pelvis. Cavity, 3½ in.	36	14 years. .	Flooding at periods, with pain, tenderness and leucorrhœa.	Intra-uterine plus 35 to 45, five times.	1 month .	Flooding arrested and improvement of symptoms.	1½ years.
26	Intra-mural growth involving whole uterus, including cervix, filling pelvis and extending to crest of iliac bones.	33	2 years. . .	Flowing every day for two years; no tenderness and no adhesions.	Intra-uterine plus 50 to 85 ma., once a week.	2 months .	Hæmorrhage ceased after the first application.	
27	Intra-mural growth, size of goose egg, in anterior wall.	40	2 mos. (?) .	Pain and bladder pressure, with much local tenderness. Menstruation irregular. Leucorrhœa profuse.	Intra-uterine plus and — 20 to 50 ma., once a week.	1½ months	Complete symptomatic cure and reduction of tumor to the size of a walnut. The tumor is now sub-peritoneal. Menstruation normal.	1 year.
28	Intra-mural myoma, extending an inch above navel, with a cystic projection on right, containing "cells of Drysdale."	47	7 years. . .	Attacks of intense pain at periods, in which tumor swells several times larger, impinging on ribs. No hæmorrhage. Health impaired.	Intra-uterine plus and — 40 to 150 ma., twice weekly. Method changed to vagino-abdominal alternatives, 150 ma. after 3 months with aspiration of cysts.	1¼ years. .	Reduction of tumor to size of an orange and removal of all symptoms. No attacks for six months.	6 months.
29	Intra-mural and sub-peritoneal projection from right cornua, reaching to 1½ in. of umbilicus. Cavity, 3½ in.	29	9 months .	Menstrual flooding every three weeks, with constant pain and tenderness. Menorrhalgia.	Intra-uterine plus 25 to 70, once a week, with intervals. Vaginal applications for a time.	13 months.	Relief of pain and restoration of normal flow. Tumor slightly smaller, more disengaged into abdominal cavity.	Still under treatment.
30	Intra-mural enlargement of uterus, with projections to both sides. Electrode inserted 3¼ inches.	44	12 years . .	Menstrual cramps, requiring physician and morphia regularly. Flow lasts two weeks, and is profuse.	Intra-uterine plus 20 to 60 about twice a week. Cramps followed treatment at first.	3½ months	Relief of pain and restoration of normal flow (5 days). Tumor distinctly smaller.	7 months.
31	Intra-mural growth, size of large lemon, in left wall.	30	1 years. . .	Constant bleeding, lasting for months, requiring rest in bed; constant pain and tenderness; copious leucorrhœa.	Intra-uterine plus 20 to 30 ma., six times, with one — vaginal 100.	2 months .	Relief of pain, hæmorrhage and leucorrhœa. No notes of change in size.	
32	Intra-mural enlargement of uterus to size of child's head, extending to 3 inches below umbilicus.	46	2 years. . .	Former attacks of bleeding; at present, pain and pressure symptoms.	Intra-uterine — and plus 20 to 70 ma., twice a week; later uterine alternatives 70 to 100 ma., once a week.	10 months.	Relief of all symptoms; reduction in size to five inches below umbilicus.	
33	Sub-peritoneal growth, filling pelvis and extending to 1¾ in. of umbilicus, attached by sessile pedicle to anterior of uterus.	45	6 years. . .	Pressure symptoms in moderate degree, with vesical interference.	Vagino-abdominal alternatives, 150 ma., with occasional intra-uterine — 30 to 100. Puncture impossible owing to bladder.	5 months .	Release of tumor from pelvis upwards into abdomen. Results otherwise negative.	2 months.
34	Intra-mural and sub-peritoneal multinodular growth, size adult head, extending to 2 inches of umbilicus.	45	4 years. . .	Bleeding periods and local tenderness, associated with bronzed complexion, anæmia and nervous prostration.	Vagino-abdominal alternatives 100 ma., once per week. Intra-uterine treatment not well borne.	5 months .	Normal periods, great improvement in health and slight reduction in size.	
35	Sub-peritoneal, sessile growth, extending from Douglas' pouch to 2 in. below umbilicus. Narrow; movable.	50	Discovery recent.	Retention of urine recurring frequently caused tumor to be diagnosed. Much pain in left leg. Menses free.	Buried puncture — 100 to 150 ma., every two weeks.	5 months .	Relief of pain and pressure on bladder and reduction to 4½ inches below umbilicus (about one-half).	Recent.
36	Intra-mural projection, size of walnut, in posterior wall. Cavity, 3½ inches. Fibroid ovary on right side.	36	5 years. . .	Menorrhalgia and menorrhagia at three-week intervals. Constant pain and weight. Leucorrhœa.	Intra-uterine plus 30 to 60 ma., once a week at intervals.	6 months .	Normal periods free from pain at four-week intervals, with relief of weight symptoms and reduction of cavity to three inches.	Recent.
37	Intra-uterine polyp., size of hen's egg, pedunculated.	52	5 years. . .	Ex-sanguinated by excessive and long-continued hæmorrhages.	Intra-uter. faradic to extrude tumor without hæm. After expulsion it was removed by torsion of pedicle.	15 weeks .	Removal of tumor and restoration of health.	1 year.

No.	Description of Growth.	Age of Patient.	Known Duration of the Growth.	Clinical Symptoms.	Method of Treatment.	Total Duration of Treatment.	Results.	When results were verified after Cessation of Treatment.
38	Sub-periteneal mass filling pelvis and left side of abdomen to ribs, of uncertain attachment to uterus, extremely hard and firmly fixed.	54	12 years.	No symptoms until a recent attack of bowel obstruction. Health poor.	Vagino-abdominal alternatives. 125 to 150 every other day. Eminent consultant diagnosed probable sarcoma.	3 months.	Bowel obstruction cured; tumor loosened considerably and slightly lessened in size.	2 months.
39	Intra-mural fibroid mass reaching to 1½ inches of umbilicus.	46	3 years.	Lameness and dropsy of right leg from pressure. Pain and local tenderness.	Vagino-abdominal alternatives 80 to 125 ma., twice a week.	2 months.	Removal of lameness in two weeks. Arrest of menstrual pain and slight reduction in size.	Recent.
40	Intra-mural fibroid, size of large apple, in posterior wall.	40	15 years.	Local tenderness and pressure on bladder. Old history of hæmorrhages.	Intra-uterine plus and—30 to 80 once or twice a month.	10 months.	Symptomatic cure and considerable reduction in size of tumor.	6 months.
41	Intra-mural growth, enlarging uterus to size of orange.	29	6 years.	Pain and profuse periods, which latter recur two and three times a month.	Intra-uterine plus 15 to 30 ma.	1 month	Arrest of menstruation and cure of symptoms. Great reduction in size.	6 months.
42	Intra-mural growth in posterior wall, filling pelvis, and extending 2 inches above symphysis.	37	6 years.	Pain and profuse periods. Bladder much affected by pressure.	Buried puncture — 250 to 60 ma. six times, and intra-uterine plus 35 to 60 ma. once a week.	9 months.	Partial relief of pain. Tumor reduced to a size that does not project above symphysis.	Recent.
43	Intra-mural and sub-peritoneal growth, filling abdomen to 1½ inches above umbilicus. Syphilitic suspicion.	40	12 years.	Pain and profuse periods. Locomotion painful.	Buried puncture — 200 to 60 ma., and intra-uterine plus 30 to 50 ma. weekly, at intervals.	1 year.	Relief of pain. Menstruation regular and less free. Tumor reduced to half inch above umbilicus.	Recent.
44	Intra-mural growth, size of sweet potato.	29	15 years.	Pain, profuse and frequent periods. Was opened for diagnosis by a surgeon three years before.	Vaginal plus 30 to 100 ma. twice a week.	1½ months	Cure of symptoms. No change in size.	6 months.
45	Intra-mural nodule in anterior wall, doubling the lateral diameter of fundus.	35	6 months.	Incontinence of urine, pain and tenderness.	Intra-uterine — 23, twice.	1 week. .		
46	Sub-mucous growth, enlarging uterus to fill pelvis, and reaching to ½ in. of umbilicus.	48	7 years.	Profuse bleeding constantly for several years. Now nearly ex-sanguinated. Much pain.	Int.-uter. plus 60 once arrested hæm. somewhat. Five mos. later a 5-lb. tumor was delivered per vaginam.	1 week.	Complete cure. Tumor delivered.	6 months.

of the tumor; 79.4 per cent. in symptomatic cure with or without reduction in size; 5.3 per cent. were unaffected; and 2.5 per cent. were made worse. In other words, about 92 per cent. were successes and 8 per cent. failures.

THE COMPLETE CURES BY ABSORPTION.

Of the five cases of this, the first class, all were intra-mural in situation, and all were treated by intra-uterine applications.

THE CASES SYMPTOMATICALLY CURED AND ANATOMICALLY REDUCED.

Of the twenty-three cases of this class fifteen were intra-mural, four sub-peritoneal, three intra-mural and sub-peritoneal, and one sub mucous.

THE CASES SYMPTOMATICALLY RELIEVED WITHOUT ANATOMICAL REDUCTION.

Of the eight cases of this class, six were intra-mural, one intra-mural and sub-peritoneal, and one sub-mucous. Six of these cases were placed in this class because, being dispensary cases and difficult to find, no record of their condition could be secured after their pains had been relieved and they had ceased attendance. It is possible that reduction in size has since occurred in some of them.

THE FAILURES.

Two cases were materially unaffected by the treatment, and one was made worse. The two were Nos. 12 and 33. No. 12 was that of a patient who had two movable, painless, sup peritoneal growths attached to the uterus by long pedicles. There were absolutely no symptoms of these tumors beyond the physical fact of their presence, and as they were not situated favorably for electro-puncture and were giving no trouble anyway, they were left alone, after thorough trial of mild intra-uterine applications. No. 33 was a large kidney shaped sub-peritoneal tumor attached to the anterior surface of the womb and lying between that organ and the bladder. As the bladder was spread out in front of it, fan-shaped, preventing puncture, resort was had to long continued vaginal alternatives; under these the tumor was released from the pelvis, but the patient was not sure that she felt any better.

The case made worse, No. 3, a large intra-uterine fibro-cyst, was treated by me early in my experience with these growths, and before it was pointed out by Apostoli that this form was liable to be made worse by electricity. The death from septicæmia did not occur until some time after the cessation of treatment, and during attempts to extract the mass surgically by piecemeal. At the autopsy the anterior wall of the uterus was found to have been punctured. This case bore a strong resemblance to one related by Emmet in his work on "Diseases of Women" (Case 39, page 587), in which death also occurred during attempts at extraction by piecemeal, and though

sent to me by an expert surgeon, was better adapted to treatment by hysterectomy than by any form of electricity.

METHODS.

It will be noticed that six cases were treated by puncture. The greater number of these punctures were of the kind that has been designated as "buried"—a variety of puncture that was originated by myself, and one that I think both more powerful and more safe than that described by Apostoli, unless the latter is extremely superficial. Unlike the Apostoli needle, which is only insulated by a movable sheath up to the point at which the puncture is made, my own needle is insulated by vulcanized rubber to within one centimeter of the end, with a view of preserving the track of the needle through healthy tissue from an electrolytic softening that would prevent immediate union. Punctures made in this way have been observed by me to heal in three days in spite of the use of 150 ma. at the point within the fibroid mass, while the older form of puncture may remain unhealed for a week or more.

No unpleasant reactions followed any of the punctures, which were sometimes exceeding an inch in depth; and while I do not say that any but those skilled in it should attempt this method, I do not hesitate to employ it myself in those somewhat rare cases that are adapted to it. None of the cases in which the tumor disappeared were punctured, but this was merely because their intra-mural situation neither required nor permitted it.

The intra-uterine method is certainly the method of choice, and with the elastic platinum electrode devised by me, or those of Martin, much of the risk of stiff sounding is avoided. I have been disposed of late to increase the intervals between these applications to from five to seven days, interspersing one or more vagino-abdominal galvanic alternatives for their additional help.

These latter applications, which have been associated with the name of Danion, have a considerable value when neither of the two better methods are available. I have seen reduction occur during the use of this method in several cases, and can testify to its power over inflammatory exudates around these growths.

An important element of success in the electrical treatment of some fibroid tumors is persistence—a quality of value in many other forms of work.

CONCLUSIONS:

1. While an increasing familiarity with hysterectomy for fibroid tumors will doubtless render operators more expert in that work, and possibly lessen still further the mortality of the operation, accurate knowledge is yet wanting concerning the after histories of the cases reported as successful, with special bearing upon the relief of painful symptoms, or their increase by the addition of post-operative incidents or accidents.

2. A conservative method of treatment which apparently acts by inducing retrogressive changes in the morbid process, resulting in a complete cure of over 12 per cent., and a practical cure of 74 per cent. of all cases, deserves most careful consideration from scientific men, since but few remedial measures for analogous diseases can lay claim to an equal measure of success.

3. The electrical method of arresting, reducing and dispersing fibroid tumors, besides being truly curative in transforming vitiated tissue action into natural absorptive processes, has the further merit of leaving intact all neighboring organs and functions yet existing, as the ovaries, etc., the current acting as a general revivifier of all highly organized parts and processes, while hastening the destruction of adventitious and lowly organized tissue.

TRAUMATISM OF THE CHEST.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, Washington, D. C., May 5, 1891.

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In the course of my investigations on thoracic surgery for the *Annual of the Universal Medical Sciences*, I have been strongly impressed with the lack of knowledge in regard to the injuries of the chest. While this subject has been considered somewhat carefully in my two contributions to that work, there are many practical details of great importance which are not touched upon, owing to the paucity of data afforded by the very limited reports in this branch of surgical experience.

It is not my purpose now to enter into the minute distinctions of the lesions resulting from violence to the walls and contained viscera of the chest. I ask for the attention of surgeons to the great advantage of methodic treatment of traumatism of the chest.

All those inflammatory processes of a latent or idiopathic nature, which lead to serous effusions primarily or to suppuration secondarily, within the thoracic cavity, are excluded, as not germain to our present undertaking. In like manner, the very extensive lesions involved in operations for the relief of the above conditions in all stages do not come within the scope of this paper.

Foreign bodies entering through the trachea into the bronchi, and causing mechanical obstruction or inflammatory complications, call for consideration, from the general inflammatory impression transmitted to the pulmonary structure.

Blows upon the parietes of the thorax which propagate a shock to the lungs or heart, involving an impairment of function, or subsequent organic changes, come appropriately under the heading of traumatism, though no superficial contused wound is apparent.

Of course, all violence from without which produces injury to the structures within the chest, should be regarded as the proximate cause of the lesion, whether it be hæmorrhage, congestion or inflammation.

The grosser accompaniments or consequences of violence, consisting in notable contusion of the soft parts and fracture of the bony walls of the chest, are frequently the exciting causes of transmitted inflammation to the vital structures of the thorax.

Among the gravest injuries to the chest are the wounds by firearms and by cutting or puncturing instruments. These generally bring about the entrance of air into the pleural cavity, and thus, by pressure upon the corresponding lung, there is serious interference with the respiratory act. Should the pulmonary tissue be involved in the wound, there is likely to occur emphysema from the entrance of air into the areolar tissue of its parenchymatous structure, so as to effectually prevent the alternate expansion and contraction of the bronchial ramifications.

The former condition of pneumothorax may be a result of air escaping from the bronchial tubes when wounded, even when the external incision or puncture may be of a valvular nature which does not admit of the entrance of air from without.

If the external wound is patulous, the ingress and egress of air occurs with each act of expiration and inspiration, inducing the condition of traumatopnœa.

This is a most unpleasant result, and introduces a grave complication in the nature of the case.

There is also most frequently sanguineous extravasation into the pleural cavity from such injuries, and if the lung has not become collapsed from the entrance of air, its function of respiration is impeded, if not obliterated, by the blood pressure.

Should the parenchymatous structure be involved in gun-shot or punctured wounds of the lungs, there may be emphysema to a greater or less extent throughout the cellular tissue of the thorax and adjacent parts.

The constitutional or systemic effects of any violence to the thorax depends upon the amount of shock in the first instance, or the inflammatory process which is developed subsequently.

The greatest diligence on the part of the surgeon is requisite to avert the immediate fatal result of penetrating chest wounds. Apart from the general manifestations of chest wounds, there are local effects from mechanical causes which require our consideration.

One of the most serious consequences of violence to the walls of the thorax is rupture of the lungs. A fall upon some solid body or the pressure of some heavy weight, while the lungs are greatly distended by closure of the glottis, induces rupture of the pulmonary tissue, with all the serious results of pneumothorax and hæmoptisis. This may occur even without an abrasion upon the surface of the chest; and the history of such an accident is the only explanation of the grave condition within the thorax.

A forcible impression upon the walls of the chest may fracture the sternum or ribs and drive either inwards so as to lacerate the lungs or the heart, leading to immediate or remote serious effects.

One of the grave consequences of an opening through the chest walls is the protrusion of a portion of the lung, constituting a hernia. If this should occur under the observation of a surgeon, he would find little difficulty in returning it and retaining it within by a compress. But most frequently it has been exposed for some hours and has become engorged, so that it is entirely impracticable to reduce it without enlarging the opening in the walls of the chest. This would seem the most feasible mode of relief if the vitality of the tissue had not been impaired by the constriction. But it is generally held to be safest either to allow the protrusion to remain and slough away, or to assist its detachment by placing an elastic ligature around the neck of the hernial tumor. The edges thus become agglutinated and the lung occluded. There may also occur laceration of the lesser or greater blood vessels of the thorax calling for prompt relief, if the injury does not prove immediately fatal.

It has been proven by subsequent observation of the effects that lesions of the heart have healed and that injury to the coats of the large arteries are not necessarily fatal. But there is no instance on record of a wound of the vena cava without a fatal result.

The thoracic duct, in like manner, cannot be wounded with impunity, and the escape of the lymph terminates in death.

While the ligation of the intercostal arteries, the internal mammary and the subclavian is attended with difficulty, the hæmorrhage from these vessels may be controlled, and the patient should not be abandoned to his fate. If blood has accumulated within, it may be withdrawn by suction, or its escape may be promoted by position.

Those who have had the largest sphere of observation in this branch of thoracic surgery will best understand the uncertainty hanging over pulmonary disorders resulting from violence.

Commencing with the doubts as to the production of traumatic pneumonia, and running through the abscesses of the parenchymatous structure of the lungs, it is remarkable how little is finally and definitely determined as a guide for practice in thoracic injuries. It will be found upon attempting to analyze the reports of such lesions that quite a variety of opinions are entertained by different observers, and that really no methodic treatment has been adopted generally by the medical profession. I know of no work on surgery which lays down fixed rules for the practitioner in the management of wounds of the chest.

The contributions to the literature of traumatism of the chest in Holmes' System of Surgery, Vol. I, in the International Encyclopædia of Surgery, Vol. II, in the Reference Hand-book of Medical Sciences, Vol. IV, and in the Annual of the Universal Medical Sciences for the years 1889, 1890 and 1891, represent fairly the status of this branch of surgery. Those who seek to keep abreast of the recognized data may learn from these works what has been accomplished for the relief of this class of injuries. It will be noted that there are conflicting views in regard to the proper treatment of some of the consequences of penetrating wounds of the chest, dependent, no doubt, to a great extent, upon the different standpoints from which observations are made. While there is a correspondence, for the most part, among different authorities in the propriety of closing the external opening in the wall of the chest, when the amount of blood in the pleural cavity is small, contradictory opinions are expressed when it is large.

To define more clearly the attitude of those who have written upon this topic, I may state that individual views of the nature of such injuries, with the steps recommended for their relief, rest very much upon personal observation, and not upon the consensus of general experience by the profession.

There are articles upon thoracic wounds in most of our standard works on surgery, presenting many points of a practical bearing, as viewed by the author, yet with such material differences in their application, under the emergency of treatment, as to avail little for the practitioner.

While we should not overlook the writings of former days, it may be stated that little progress has been made in the elucidation of wounds of the chest since the works of Gross and Agnew were presented, and some of the more recent authors, as Wyeth and Roberts, have touched upon chest injuries very briefly, while Senn ignores, with a few exceptions, traumatic developments of the thorax, in his principles of surgery.

Many important data, illustrating the results of gunshot wounds of the chest, are given in the Surgical History of the War, published by the United States Government, and the statistics of non-penetrating and penetrating wounds of the chest therein presented, demonstrates the gravity of the latter as compared with the former in a most conclusive manner. This, however, only confirms the results of the records of military operations throughout the world, showing that about 1 per cent. of non penetrating wounds of the chest prove fatal, while over 65 per cent. of penetrating wounds terminate in death at an early period after the injury.

One of the practical questions of greatest moment, in regard to the hermetically sealing of gunshot wounds of the thorax, remains unsettled.

Experiments upon the inferior animals, commencing with those of Houston in 1728, for illustrating the effects of punctures and incisions into the thoracic cavity, have been attended with such different results upon the lungs, that it is yet undetermined whether collapse ensues directly from the wounds. There is such an intimate relation of the surface of the lungs to the costal pleura, that something must separate them for the occurrence of pneumothorax, and hence it occurs that openings are not always followed by this result.

It is held that the falling away of the lung is not a uniform consequence of a penetrating wound of the chest. If the wound is small, or if it is at a distance from the free margin of either lobe, the expanded lung remains in contact with the costal pleura.

The adhesion of the two pleural surfaces is illustrated by an experiment of Surgeon A. H. Smith, in which, in a recently killed animal, an opening was made in an intercostal space midway between the sternum and the spine. The lung did not collapse; but on making another in the same intercostal space, close to the sternum, the outer surface of the lung was observed to slide backwards, though still remaining in contact with the chest walls, until the edge of the lobe came opposite the first opening. Then for the first time air entered here, and the pneumothorax became complete.

Gordon and McDonald found that with small tubes introduced into the chest, the breathing became quick and laborious, while the lungs had fallen away from the chest walls for an inch. After four minutes, they enlarged the wound and put in tubes whose united calibre was twice that of the glottis. The respiration became very laborious. On closing the wound, however, and applying friction to the chest, the respiration was restored, and in ten minutes the animal was able to walk about. It was killed on the fifth day and nothing notable was found in the chest.

Dr. Northrup reports some experiments on animals, contradicting the statements of Samuel West, that the force of cohesion sufficed to maintain the lung in complete expansion when the parietal pleura was punctured.

Further experiments were made, in which a dog's two pleuræ were fitted with double flanged canulæ, stoppered with corks. Until the dog recovered from ether, the two corks were left in place. When fully recovered one cork was withdrawn, and the dog scarcely suffered dyspnœa on moderate exercise. When both corks were removed the dog traveled about for two minutes and succumbed to severe dyspnœa, which again entirely disappeared on replacing the corks.

These results throw some light upon the practical resort to closure of the external openings into the pleural cavity as a curative measure in cases of penetrating wounds of the chest.

Howard's proposition to the Surgeon-General of the United States during the war, to test the process of hermetically sealing the external orifices of gunshot wounds of the chest, met with so much prejudice on the part of the surgeons of the Federal Army, that it was used in a limited number of cases. It is also inferred that the conditions under which this measure was tried were not favorable to its success, as the most grave cases were the subjects. Judging from my own experience of the good effects of closing penetrating wounds of the chest, and from the records of cases thus treated by others, it seems unfortunate that hermetically sealing was not applied on a larger scale, so as to afford the statistics for a final and conclusive decision as to its merits. Independent of the recognized advantages of closure in the lesser accumulations of blood in the pleural cavity, it is held by some, with a show of practical discernment, that in the most extreme cases of thoracic hæmorrhage, the flow of blood externally should be arrested by plugging the orifice, so as to favor the coagulation af the blood within, and by compression upon the lung to prevent further extravasation.

If this course is applicable in the most aggravated condition of penetrating wounds of the chest, as well as to the simpler form in which there is a slight hæmorrhage into the pleural cavity, why may it not prove serviceable in the intermediate accumulations of blood in the thorax, and thus be applicable to every variety of penetrating wounds of the chest.

It is not expected that a general rule can be laid down, without exceptions, for the immediate and complete closure of all penetrating wounds of the chest. There must be certain preliminaries observed in the preparation of the patient for receiving the benefits of such proceeding, so as to close the orifice with the least blood in the cavity of the pleura, that is possible. Placing the patient so that the opening shall be the most dependent part, with a firm bandage around the thorax, and making the occlusion immediately after the expulsion of air and blood from the wound by forcible inspiration, should promote a favorable result.

If the case is complicated with emphysema involving any considerable portion of the surface, plugging the orifice with a condom stuffed with sponges, as has been suggested for the arrest of hæmorrhage from an intercostal artery, will prove efficient in preventing the escape of air into the cellular tissue and at the same time accomplish complete occlusion of the thoracic cavity.

A comparison of this procedure may be made with that in which the air enters the cavity of the pleura and induces collapse of the lung, thus arresting the flow of blood from the wounded parenchyma, with a tube in the opening, as recommanded by Packard, for prevention of emphysema. In this latter, the air pressure is supposed to arrest the bleeding. In the other condition, blood clot presses upon the lung so as to control the hæmorrhage.

The variable influence of the air in the pleura, with more or less air entering the lung by the inspiratory act of the sound side, renders this recourse very doubtful in permanently controlling the escape of blood from a wound of the lung.

On the contrary, the formation of blood clot within the pleura keeps up a pressure which can be relied on to prevent the further bleeding from the pulmonary lesion.

All those who have observed the relief of distressing dyspnœa by closing an open wound of the chest, concur in its great benefits.

It may be inferred from the favorable progress of cases in which a large accumulation of blood has remained in the pleural cavity, that its gradual absorption occurs. If the air is completely shut off from without, of course germs cannot enter to set up decomposition in the mass, even should there be a perforation of the bronchia, as it is held that air passing through this seive-like structure is rendered innocuous.

With the larger death rate from penetrating wounds of the chest treated without special reference to the process of occlusion, the result is not likely to be more serious from a uniform adoption of sealing hermetically all external openings of penetrating wounds of the thorax.

If the worst consequence of this procedure ensues in purulent development, there is open to the surgeon such measures of relief as have been adopted successfully in empyema from other inflammatory processes.

In this connection, a few cases which have come under my observation, may serve to illustrate the open and closed methods of treating wounds involving the thoracic cavity.

Many instances of gunshot wounds of the chest were brought to my attention as chief Surgeon of Division, during the civil war in this country. But I had no opportunity of following up the subsequent course of those injuries; and would refer to reports of such cases in the Surgical History of the war for the results. I will give, how-

ever, an outline of some characteristic cases, occurring in my own private practice and in consultation with others, during the past few years.

One case had a pistol ball wound at short range between the fourth and fifth ribs, on the right side, in front, and ranging downward. All the physical signs were present, indicative of a wound of the right lung, extravasation of blood into the pleural cavity. It was kept open for a time, but closed afterwards spontaneously and terminated fatally.

Another case, in which a ball from a large Colt's revolver traversed the left side of the chest, entering through the lower border of the pectoral muscle and escaping between the ninth and tenth ribs near their cartilages, involved the pleural cavity. There was a discharge of frothy blood from the posterior wound and the physical signs of extensive sanguineous extravasation into the left pleural cavity. The heart was perceptibly pressed over to the right, carrying the apex beyond the median line. While no suture was used to close the wounds, they were hermetically sealed by antiseptic dressings, and notwithstanding considerable constitutional disturbance, subsequently the patient made a good recovery.

A third case was a child, accidentally shot, the pistol ball entering through the ensiform cartilage and ranging upwards. No precaution was used to close the wound, and the patient died from empyema.

The fourth case was from a pistol shot which entered just below the ensiform cartilage, ranging upwards to the right and lodging above the eighth rib, thus passing through the diaphragm and lower portion of right pleural cavity. The external hæmorrhage was not pronounced, but the presence of blood in the chest was inferred from the physical signs of dulness upon percussion, and diminution of the respiratory murmur under auscultation. There seemed to be no indication for occlusion of the external wound, and it was therefore left open. As there may have existed complications involving the abdominal viscera, the fatal termination on the fourth day cannot throw any light upon the true cause of death.

The fifth case affords an instance of a pistol ball entering the chest, immediately over the heart, traversing the mediastinum and lodging upon the sixth rib of the right side just behind the posterior axillary line. The external wound was occluded, and the ball was not removed until after the general shock and slight inflammatory reaction had passed off. The patient made a good recovery by the strict observance of masterly inactivity.

This case, with that preceding, having the ball lodged superficially for several days before removal, seems to emphasize the caution against cutting down and extracting a ball under such circumstances at the outset.

I recall in this connection, after the first Manassas battle, allowing a minnie ball, which was impacted in the clavicle and first rib, to remain, lest by its extraction the chest cavity should be exposed; but the final result of the case is not known.

The practice of removing balls lodged between ribs, which is inculcated in Agnew's Surgery, without proper limitation, is more honored in the breach than by the observance. It is evident that the immediate extraction of a ball from the border of a rib, after it has traversed the chest, must leave an opening into the cavity of the pleura and aggravate the gravity of the case.

A counter opening in the muscular structures for the removal of a ball which is near the surface, does not in the experience of surgeons of large practice, retard the healing process along the line traversed by the ball.

But with the conditions presented in a gunshot wound in the thorax, when an opening already has been made by the entrance of the ball, it is not good surgery to make another for the extraction, until the wall behind has become solidified.

In illustration of the effects of punctured and incised wounds of the chest, a few examples of knife stabs, which have occurred in my practice, will be added.

A case of stabbing, between the fourth and fifth ribs, in front of the anterior axillary line on the left side, was accompanied with localized emphysema. While there was evidence of sanguineous effusion in the pleural cavity, the bleeding was profuse externally.

There was slight dyspnoea upon lying down, which was relieved in the sitting posture. The wound was closed by adhesive plaster with a compress and bandage, and the patient recovered without an untoward symptom.

It has not been found necessary to use stitches in these wounds inflicted by the thrust of a knife blade, as the coaptation is effected by the above process, so as to hermetically close the opening in the chest.

In another case a stab was inflicted between the sixth and seventh ribs on the left side near the margin of the scapula, from which blood and air escaped at each inspiration, with considerable accumulation of blood in the pleura, and hæmoptysis. The external wound was closed immediately after a gush of blood and air from the opening. The patient became more quiet afterwards. This case was accompanied with traumatic pneumonia and marked constitutional disturbance, but ultimately recovered.

A third case came under my observation in which a knife blade entered between the fifth and sixth ribs on the right side, penetrating the lungs and attended with the accumulation of blood in the pleural cavity. There was no very marked dyspnœa, and as the flow of blood exter-

nally gradually diminished with the dependent position of the wound, it was not thought that closure of the opening was indicated. Inflammatory symptoms soon developed with subsequent adhesion of the pulmonary and parietal pleura. In the end, suppuration of the lung found its way though the external opening. A weak solution of carbolic acid was injected into the suppurating tract daily, and the healing process progressed favorably, so that there remained eventually but slight impairment of the lung from the injury.

The inference from these cases goes to prove that suppuration is more likely to occur when the incised wound is left open than when it is closed immediately and kept occluded.

A fourth case was seen some days after a stab had been inflicted between the seventh and eighth ribs, and there was a protrusion of a small globular mass of pulmonary tissue from the wound. As it had occurred shortly after the injury and was tightly constricted by the margins of the wound in the thoracic wall, the neck of the hernial tumor was encircled with an elastic ligature, as most likely to effect a prompt and safe detachment of the mass. In a few days it separated, and there was no further trouble with the case. If there was any escape of blood into the pleura it was most effectually shut in by the plugging of the opening, and afforded an illustration of the favorable issue of hermetical sealing in penetrating wounds of the thoracic walls.

IS EARLY RESECTION OR CONSERVATIVE TREATMENT ADVISABLE IN COXITIS?

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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While our increased knowledge of the pathology of tuberculous joint affections has resulted, in most joints, in earlier operations, in order to remove the local focus before the joint has become totally disorganized, the same cannot properly be said about tuberculous affections of the hip-joint. We still find the same disagreement between the adherents of conservative and operative treatment, and I scarcely say too much when I state that, in the vast majority of cases, excision is still made as *ultimum refugium* only. Yet even in these cases, a better knowledge of the pathology and consequently improved operative methods, have been followed by decreased mortality and improved functional results. In order to decide the question, it seems proper shortly to study the pathology of coxitis. We formerly believed that tuberculous affections of the hip, or, for that matter, of any other joint, commenced as diffuse inflammations, which went on to destruction of the joint. Post-mortem examinations were rare, except in cases which represented the later stages of coxitis. In these the synovial membrane was always found diffusely diseased, the ligaments and the perisynovial tissue changed to gelatinous, œdematous or fibrous tissue, the joint itself filled with fungous granulations, the cartilages generally ulcerated and shed, leaving the epiphyses in a state of softening and caries. But often we found the cartilages more or less intact, and we therefore believed that the synovitis was the primary lesion, the disease of bones and cartilages secondary. The tuberculous bacillus was unknown, and we supposed a dyscrasia present. Furthermore, all acute infectious diseases were known to be followed occasionally by inflammations of the joints, which always commenced as a synovitis, as in pyæmia, puerperal fever, typhus, scarlet fever, etc. It was acknowledged that the inflammation occasionally might commence in the bone, but it was believed that it even then commenced as diffuse inflammation of the medullary tissue in the epiphyses.

We overlooked that these diffuse processes, whether in bone or in synovialis, were secondary, and were the result partly of an infection, partly of reactive and reparative processes.

It is the Germans, particularly the late Prof. Volkmann and Prof. Kœnig, both of whom I quote extensively in this paper, to whom belongs the credit of proving that the fungous or tuberculous joint affections commence, in the majority of cases, as a local focus in the bone, and that the consecutive entrance into the joints of the *materia morbi* from the local focus produces the diffuse inflammation of the synovialis and the epiphyses. That the disease, in a few cases, may commence as a synovitis, is not denied, and is occasionally proved by post-mortem examination.

This is by no means a generally accepted theory. Haberern, for instance, states that in 132 cases of excision, a primary osseous lesion was present 80 times, 23 times a primary synovial affection, while the starting-point was doubtful in 29 cases. Watson Cheyne thinks the disease more often primarily osseous, although not in the proportion Haberern states. The trouble is that only in early cases can the presence of a local focus be shown. In late cases we find exactly the same changes in bones and joint, whether the disease started as an osseous or synovial inflammation.

It is, therefore, probably true that the vast majority of cases commence, as Volkmann says, as an osteitis and not as an arthroitis, and more particularly as a circumscribed cheesy or tuberculous osteitis or osteomyelitis.

It depends upon circumstances whether the joint later becomes attacked, viz.: whether the

products of the inflammation perforate into the joint, as usually, from anatomical reasons, occurs, or seek the surface. The primary focus, at least in childhood, is always in the bone, either central or near the periosteum. Generally only one focus is present, and it is rarely the case that both epiphyses are attacked simultaneously.

The focus is generally small, as large as a cherry-pit, or at most as a nut. The neck is the point of predilection, in the near neighborhood of the epiphyseal cartilage, or in the diaphysis or trochanter major, while the head is rarely the starting point. The focus may perforate the epiphyseal cartilage in order to invade the epiphysis. It may even commence as a chronic osteomyelitis in the cavity of the femur, and work its way upwards. Primary attacks of the acetabulum are probably more frequent than generally believed. Haberern states that in his 80 cases, the acetabulum was attacked alone in 50 cases, the femur alone in 23 cases, and both together in 7 cases.

The focus presents itself as a little cavity filled with cheesy granulations and bone detritus, and frequently a sequestrum and surrounded with a pyogenic tuberculous membrane. Sequestra were present 51 times in Haberern's 80 cases, soft caseous deposits 29 times. If the focus perforates into the joint, tuberculous synovitis occurs, with very acute symptoms. If the focus is in the neck or trochanter major, the joint occasionally escapes, the osteitis and abscesses being extra-capsular.

While the osteitic process is going on in the neck and before perforation takes place, we may discover changes in the joint itself. The synovial membrane, the periosteum and the periarticular tissue become more or less infiltrated and œdematous, slight exudation may occur, and a partial obliteration of the joint may take place; little by little the whole synovial membrane may be changed into a granulation-tissue, and yet we have no tuberculous arthroitis. When at last the perforation occurs, it is into a half obliterated joint, and the symptoms are therefore proportionately less, as a joint reacts the more severely to infectious products when the synovial membrane is physiologically intact, and the less severely the more the synovial membrane has been changed into a granulation-tissue. This partial obliteration we meet particularly in the knee-joint, but less often in the hip-joint, where we consequently are more apt to meet acute suppurative arthroitis. Yet even here we occasionally see a central necrosis of the head and neck being followed by an obliteration of the joint, thereafter destruction o the epiphyseal cartilage and diastasis of the head, which meanwhile has become firmly attached to the acetabulum. As a rule, the hip-joint is attacked early, as the whole neck, in which the local focus generally is found, is inside the synovial capsule, but we may see the joint escape even when the focus starts as a central necrosis in the head or neck. A carious fistula may then be found perforating outward through the trochanter major. This point is of importance, as indicating the way in which such a central necrosis may occasionally be attacked, through trephining of the trochanter and the neck or by ignipuncture.

The perforation of the tuberculous local focus having occurred into the healthy or half obliterated joint, farther pathological changes take place, while at the same time the symptoms of coxitis, which so far have been vague and insignificant, become pronounced on account of the implication of the synovial membrane, the cartilages and adjacent Haversian canals. The characteristic symptoms are particularly the starting pains and the muscular contractions, both indicating osteitis in the neighborhood of the joint cartilages, while the position of the limb (abduction, flexion and rotation) is less characteristic, probably depending upon other causes.

The pathological changes are those of a tuberculous synovitis with its resulting destructive processes.

The round ligament, which is covered with synovialis, is early attacked and softened, and then disappears.

The osteitic process generally commences at the place of insection of the sound ligament to the head and acetabulum, and on the neck at the place where the synovialis is attached. The cartilages become ulcerated by pressure of the granulations (Volkmann's Ulcerative Decubitus) or shed by pressure of the granulation-tissue, meanwhile developed in the dilated Haversian canals. The bones are now in a state of osteoporosis; the head loses its roundness and becomes smaller from pressure just as the acetabulum enlarges by pressure upwards and backwards, or becomes perforated by gradually developed decubitus, and spontaneous dislocations and intra-pelvic abscesses result. Peri-articular abscesses are rarely the result of the breaking down of granulation tissue in the peri-articular tissue. They occur usually from softening and perforation of the capsule itself. So much in regard to the pathology. Yet I wish at this stage to show a pathological specimen which to the fullest illustrates the pathological process as here described; the patient is a little girl of 10 years of age, who entered the Sister's Hospital in Buffalo in March, 1891. She had then been sick only two weeks, and a physician had opened an abscess on the outer side of the right femur. Contra-openings were made in the hospital and the abscess found to be situated beneath the vastus muscles, but apparently not connected with the hip-joint, which seemed healthy. Two weeks after entering the hospital she grew worse and offered the usual symptoms of coxitis. Under chloroform

the joint was examined and a carious process found on the upper side of the neck. A good sized abscess was found in the pelvis and opened. As this abscess was supposed to indicate perforation of the acetabulum, I removed the head and neck, which I here show. You see a local focus in the neck which had opened into the joint, the synovial membrane of which was found thickened and tuberculous. The round ligament had disappeared and at its place a carious process is going on. The cartilages are yet healthy. I suppose the carious process on the upper surface of the neck gave occasion to the first abscess, and that the tuberculous focus perforating into the joint produced the acute symtoms of coxitis. In this case the excision was performed about four weeks after the beginning of the disease. In another case, operated at the same time, the disease had lasted two months. I found there a sequestrum in the neck, three-fourths of an inch long, a perforation into the joint, shedding of the cartilage, osteitis of the epiphysis, diastasis of the epiphyseal cartilage and tuberculous synovitis. In both cases the operation cut short the disease, the wounds healed rapidly and the final result will be what I have always obtained, a movable joint with some shortening, which is easily overcome by aid of a thick sole. I consider this specimen of peculiar value as showing the condition in the early stage. In later resections, in which we find diffuse osteitic processes of head, neck and trochanter major, destruction of cartilages and tuberculous degeneration of the synovial membrane, it is impossible to find the local focus, as everything is diseased, but that does not prove that it was not present in the start.

Coxitis may under favorable conditions, terminate in recovery in any stage, of course with more or less deformity, and the usefulness of the limb depends upon the amount of flexion and adduction. A perfect recovery with normal joint is rarely obtained. I myself remember only one case. And with what cost is this imperfect recovery with a more or less deformed limb, obtained? It means years of suffering and treatment, be that with extension in bed or with a portable apparatus, frequent operations for abscesses with resulting fistulas, the dangers of amyloid degenerations of liver and kidneys, and of tuberculous meningitis, and lastly of an excision as *ultimum refugium*, at a time when neither the broken down constitution of the patient nor the extensive destructive processes in head, neck and shaft favor reparative processes. In those cases in which we do not have an abscess, the tuberculous focus has probably become incapsulated, surrounded with a zone of sclerotic bone tissue, and the synovial membrane is not tuberculous, although the joint may be partially or totally obliterated. In these cases conservative treatment is probably indicated. But if abscess is present, it shows that perforation has occurred and in my opinion an early operation is the only thing that can arrest the disease.

And yet, why wait for abscess? The tuberculous bacillus, as is well known, is not a pyogenic bacillus and may under favorable circumstances continue to grow and infiltrate surrounding or more distant tissues. If abscess occurs, the pyogenic bacterias, particularly the staphylococcus pyogenes aureus, will always be found present as the cause of the suppuration. The chronic pathological process has only become complicated by the acute suppuration, and the tuberculous process keeps up advancing simultaneously with the suppuration.

It must not be forgotten, that the statistics of resection must be compared with the statistics of those conservatively treated cases, in which abscesses were present. In both classes we find a great decrease in mortality in one time.

Leisrink, for instance, gives a mortality of 63 per cent. after resection, of which 22 per cent. succumbed to wound complications, 21 per cent. to marasmus, 11 per cent. to phthisis, 7.5 per cent. to amyloid degenerati, etc. A more recent English statistic of 320 cases showed a mortality of 40 per cent. Jacobson has increased Leisrink's statistics of 176 cases to 250 cases and finds a mortality of 40 per cent. The result of conservative treatment was even worse. Of 63 conservatively treated cases in Copenhagen 73 per cent. died and 27 per cent. recovered. An English statistic of 384 conservatively treated cases, in all of which abscesses were present, showed a mortality of 67 per cent., a recovery of 33 per cent.

If abscess was not present, 69 per cent. recovered. Grosch (1882) found a mortality of 28 per cent. under antiseptic treatment.

Koenig states in a recent work, that it is an exception that a patient dies after resection of acute or chronic sepsis. In spite of the decreased mortality following resection, surgeons still differ in regard to the advisability of conservative or operative treatment. Two English surgeons of large experience, March and Wright represent well the different opinions. March is strictly conservative and considers excision uncalled for. Continued rest, he says, gives a mortality of only 5 per cent., and 70 per cent. recover with slight lameness and loss of motion. Even when suppuration has occurred he gives a mortality of only 6 and 8 per cent.

Dr. Wright, on the other hand, with an experience of more than one hundred cases of excision, of which only three died as a result of the operation, strongly advocates excision as soon as external abscesses occur, yes, even before the capsule has been perforated. He maintains that excision cuts short the disease, saves pain, lessens

the time of treatment and gives a better functional result. Osteomyelitis once estabiiahed, nothing short of excision can, in his opinion, prevent the progress. Nature can, of course, get rid of the caries and necrosis, but the children who can survive the elimination are few, except among the well to do. The decreased mortality and the better functional result are the result of our increased knowledge of pathology and improved operative methods. Formerly we simply excised the head and perhaps neck and trochanter, but we left the tuberculous synovial membrane and discredited the operation because, as might be expected, suppuration continued or increased and our patients died of marasmus, amyloid degenerations, tuberculous meningitis or phthisis. Modern pathology has taught us that coxitis is primarily an osteitis, secondarily, a tuberculous synovitis and arthroitis, and that it is necessary not only to remove the bone affection, as we formerly did, but to remove the tuberculous synovial membrane just as well. If anything is left of that, relapse is sure to occur. The same is true about the tuberculous pyogenic membrane covering the abscess. If all diseased tissue of bone and synovial membrane is removed we may get healing of the wound by first intention even, just as we see it in operations on the knee-joint. I am even inclined to go a step farther than Wright, and advocate still earlier operation in order to remove the local focus before diffuse inflammation of bone and joint has occurred. I tried this recently in the case of a little girl, who had been sick six weeks and who had considerable infiltration around the neck. I made an anterior incision (Barker's), between Sartorins and tensor vagina femoris muscles and exposed the neck with ease, the extensor quadriceps femoris being pulled inwards. I found under this muscle a great mass of tuberculous material, which had not yet broken down into pus, and removed it, but I could not find the local focus, although, by flexing the hip-joint, I could examine the whole lower surface of the neck. I closed the wound with sutures and it healed by first intention. She did not improve, and three weeks after I resected the joint, found the sequestrum, three-fourths inch long, near trochanter, and a complete disorganized joint, diastasis of the epiphyseal cartilage, etc. The patient left the hospital recovered in three weeks. I show you the preparation here.

Mr. W. H. Battle reports a similar case in the London Clinical Society. He successfully removed a local focus, washed out the joint, and the child recovered in four weeks.

If the disease commences in the acetabulum (and according to Haberern this should occur in five out of eight cases), operation would be still more indicated, as the dangerous complication of intra-pelvic abscess is apt to follow. This complication has formerly been considered an absolute indication for resection, but Bardenheuer, of Cologne, has several times resected acetabulum in such cases, by aid of his symphyseal incision (extra-peritoneal explorations—Schnitt). But even if it is possible, yes, comparatively easy, to resect the acetabulum in this way, we are forced to leave behind the tuberculous synovial membrane and the secondarily affected head and neck of the femur, and the disease, I judge, would proceed in spite of this operation.

Still one question remains, whether the limb is better after the excision or after conservative treatment?

Holmes thinks that shortening is generally greater after excision and the limb less firm and less useful. Motion is more frequently present and more extensive, but the patients walk more insecurely and with more limp. Jacobson thinks the average results obtained by conservative treatment superior to those following excision, particularly in adults, where we often get flail-joints after excision.

Wright, with his large experience, thinks that excision gives better results and that much shortening depends upon using the limbs too early.

It is evident that the best result following excision cannot compare with the best result following conservative treatment: *restitutio ad integrum*. We must compare those conservatively treated cases, who have got well in spite of abscesses, caries and years of suffering, with those, in which, for the same reasons, excision was made. Few get well by conservative treatment, extending during years, without considerable flexion and adduction. To treat such a case demands such continual patience from the side of the parents, the patient and the surgeon that a good functional result is almost out of the questions unless the patient be treated in a hospital, where the surgeon has complete control over the patient and nurses. It might therefore more properly be asked, whether a flexed and adducted limb is more useful than a shortened limb after resection?

Judging from my own limited experience, I believe that excision gives a better functional result and a better looking leg than does conservative treatment in the majority of cases, particularly if you can sever the bone above trochanter minor. If you are forced to go below trochanter minor you are very apt to get a flail-joint. In early, or comparatively early operations, the disease will probably always be found confined to the head and neck.

I have during the last few years resected the hip-joint ten times, eight of which recovered with good and useful limbs, two died of other causes, independent of the operation.

The earlier the operation has been done, the better has the functional result been and the

quicker the recovery. The last two cases, the pathological specimens of whom I have shown here, left the hospital with healed wounds in three or four weeks, but have, of course, not yet been allowed to use their resected limbs. Most of the cases presented themselves in the third stage of coxitis with extensive carious destruction, large abscesses and broken down constitutions. Yet even these cases, who had been treated conservatively for a long time, were by prompt excision restored to health and comfort and provided with a firm and useful limb.

OSTEO MENTHESIS.

Read in the Section of Surgery and Anatomy at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY B. MERRILL RICKETTS, M.D.,
OF CINCINNATI, O.

I wish to call your attention to the subject of osteo penthesis, the subject of which I made brief mention at the last meeting of the New York State Medical Association, which convened in New York City.

Dealing with bone tissue has been one of the most interesting subjects to me, and I may say to surgeons in general.

The three principal points which I wish to bring out in this paper are as follows:

First: How and when may bones be restored?

Second: Should fragments of the bone be permanently removed except in case of amputation?

Third: Should not exploratory incisions be made in cases of fracture of bones where doubt exists as to their character?

I cannot do better, after making brief mention of these three interesting features, than to report the observations I have made in experimenting with the lower animals.

In the first case: How and when may bones be restored? I would say, in this class are included those cases in which the restoration of the bones, of the hands, feet, arms and legs have been removed by trauma or surgical interference without amputation.

Bone grafting, or osteo penthesis, is subject to as great a number of successes as skin grafting.

I am thoroughly satisfied, after having carried on my experiments, during the past year, that its confines are not narrow by any means.

It was Poncet, who restored the tibia within nine months, by grafting to the superior articular surface. The replanting of trephine buttons is now the established rule.

The dentists have accomplished a great deal in transplanting, replanting and implanting teeth.

The series of experiments that I have adopted to show what can be done in the way of substitution, that is, transplanting the bone of one animal to another, is not as yet complete. Suffice it to say, that enough has been accomplished to satisfy me that sooner or later, the long bones and ribs of the lower animals will be successfully transplanted for the purpose of restoring osseous structures, destroyed by any cause whatever, except that of malignancy.

I am inclined to believe that the tails of such animals, as the dog, cat, opossum, etc., after being divested of the integument and soft tissue, may be transplanted with success, as the various joints will become anchylosed, and they may perhaps supply a long felt want.

It may be found that the ribs of the lower animals can be substituted for metatarsal and metacarpal bones.

In all cases as much of the periosteum should be preserved as possible, and the bones cut with a knife or chisel, or the finest saw that can be had, preference being given to the knife, as the ends of the bones are smoother, a condition more likely to be followed by good results than if severed with a saw. I have not yet been able to save a finger, in case of injury, where the bone was completely divided by a saw; I have, however, been successful in securing union in several instances where the bone was severed with sharp edged tools. In all cases of injury when the bone is divided by the saw there is more or less foreign matter, fine in character, carried into the wound, and its removal is attended by the greatest difficulty. Thus it is these two elements, a roughened bone surface and foreign matter, that make union difficult, and yet, with the larger bones, it is absolutely necessary to use the saw. This once done, the ends may be scraped and perfectly coapted, after which the periosteum overlying the two bones is brought together and stitched with fine catgut.

I will say in this connection that I do not favor the use of the forceps in amputating any member; the objection lying in the possibility of fracture. The saw should invariably be used; with the forceps the work is more rapid but less scientific, and there is no excuse for any man applying them.

Second: Should fragments of bone be permanently removed except in case of amputation?

Bone fragments, in either compound or compound communuted fractures. Where a bone is crushed or broken into two or more pieces, the greatest care should be taken to replace the fragments, and to offer every opportunity for their union so that its strength and original shape may be preserved. That this may be made more certain, all clots and foreign matter should be cleared away and shreds of tissue removed from between the fragments, which should be immediately restored to their proper places.

In some cases, as in long bones, the fragments may be brought together with a silver wire, which may afterwards be removed.

In dealing with the fragments, cleanliness is,

above all things, first to be considered. Each fragment should be thoroughly cleansed with water at a temperature of 115° or 120°. Constant irrigation of the wound with water at this temperature is by far more preferable. If the fragments have been removed from the limb by injury or otherwise, they may likewise be restored. In compound fractures, where there are two or more fragments, it is best to allow them to remain and clean by irrigation and scraping, as the periosteum overlying these fragments will enable union to take place much sooner. If a portion of the shaft has been removed and cannot be found, I am inclined to think that small fragments, such as shavings and dust, would be the most desirable way of restoring the lost part. These bones may be from the individual himself, or from any of the lower animals. This was first suggested by McEwen, of Edinburg, and it was by this means that he restored one-third of the radius in a boy.

I am also inclined to believe that bone grafting can be more successfully accomplished in persons under 15 years of age than those older. This can be readily understood when we consider the activity of development of bone up to this age. The bone is not so brittle and the vascular supply is more perfect. It is at about this age in life that we cease to find the green stick fractures.

I am also inclined to the belief that bone would be more easily grafted near the epiphyseal line.

It is an established fact that bone cannot be grafted to any other tissue than that of bone, and that epithelial tissue cannot be grafted to any other than epithelial tissue; so that, if we can secure a sufficient amount of periosteum to overlie these fragments or grafts we will have union more certain and rapid.

In cases of compound fractures, especially where the bone has been crushed, we must first ascertain the condition of the blood vessels and nerves. These being intact we may rest assured that our patient loses no time in making the attempt of saving the fragments or restoring any portion of a bone that may have been removed.

Third: Should not exploratory incisions be made in cases of the fracture of bones where doubt exists as to their character?

Being conscious of the great difficulty that is almost invariably encountered in determining the exact condition and character of fractures, my attention has been especially called to an investigation in this line.

It is so often the case in fracture of the long bones, especially in fleshy persons, that we are utterly unable to determine what the state of affairs is. Until a comparatively recent date the injured extremity was placed in a support of some kind, and the bone allowed to heal *ad libitum*. Now, this having been an established custom for so many centuries, it may seem rather out of place at this time to suggest a different procedure, with my limited experience, from a practical standpoint, but having recently carried my observations over a series of experiments, I feel somewhat at liberty to bring this matter before you.

It is with chagrin and humiliation, many times, that we look upon the result secured in putting these fractures in plaster, or in any dressing whatever, and allowing them to take their course. We have no definite means of determining whether the fracture is transverse or diagonal. Now, this being the case, why are we not justified in making exploratory incisions in cases of fracture, as well as in obstruction of the bowel?

If cleanliness is the greatest desideratum—which I have every reason to believe it is—if it is through clean surgery that we secure such brilliant results as have been secured within the past, why need we fear any serious consequences in making a simple fracture a compound one?

True, the bone will never be as perfect as it originally was, but then there is the great satisfaction of knowing whether there are one, two or three fractures.

In all cases of fracture, especially compound, there are more or less clots and shreds of tissue, perhaps muscular, ligamentus or cellular tissue, involved in the fracture. An exploratory incision will enable these to be removed and the fragments of bone closely coapted and union made more rapid and certain.

Of course, this procedure would be confined almost entirely to the long bones; however, the the same rule would hold good in the injury of the cranium.

In cases of a blow received upon the head, we are not able to determine whether or not there has been a fracture either of the outer or inner table. The infiltration is many times so extensive that it is impossible to arrive at any definite conclusion. Now, why should we refrain from making a simple incision through the scalp, at any point, when the risks are so slight and where the good to be derived is so great?

One of the greatest principles involved in surgery, as in medicine, is to determine the cause and the state of affairs.

The sense of touch is of itself one of the greatest means of enabling us to arrive at definite conclusions.

However, the eye is equally important in many things; although it may not be possible to get a view of these fragments, it is possible for us to determine definitely what the condition is, simply by the sense of touch.

Many times the incision may not be any larger than to admit the index finger, but the finger once introduced, the state of affairs may at once be determined and thus save us from malpractice suits and the humiliation that we sometimes experience in treating fractures.

The incision once made, the question would then arise as to how the fragments of the bone may be best secured, that they may be replaced to their normal position and allowed to remain so until Nature comes to our rescue. I would say, in this connection, that I have found nothing to equal the silver wire, secured with an Aveling coil and mounted with a perforated shot. The wire may be passed around the fragments by means of a Collins' needle. The wire is made taut by an Aveling coil mounted by a shot. This may be allowed to remain indefinitely, as it causes no irritation. It may be removed at the end or four, six or eight weeks, in which case it is best to have the coil to stand at a right angle to the bone or the ends of the wire may be secured, the coil placed parallel with the bone, the periosteum be made to overlie it and allowed to remain. In this case, the bony structure is thrown out and soon encompasses the wire and its attachments. As many of these may be used as may be necessary. So far I have not seen any bad results. With one or two of the dogs I found that the integuments healed and that they caused no serious trouble.

The fragments once secured by this means, the wound should be closed and the drainage tube, which should be rubber, inserted; as we are more likely to need drainage in the reparation of the bone than any other tissue. As to the after dressing, I have found nothing better than the application of simple water dressings. These enable the wound to be kept soft and the discharge to escape freely. Towels saturated in boiled filtrated water, can be applied every hour or so as the occasion may require. It may, or may not, be necessary to place the injured extremity in plaster.

Of all the dressings, I think the plaster is the most desirable. It has been my desire in bringing this paper before you, to excite an interest in this very important matter; knowing that it will require a great deal of time, experimentation and observation to enable us to arrive at definite conclusions, in this as in all other matters, I am desirous of having your coöperation and assistance in bringing this subject before this Association at its next meeting, wherever it may be.

A JAPANESE MEDICAL NOBLEMAN.—The Emperor of Japan has named Dr. Hide Miyake, professor in the Medical Faculty of the Imperial University of Tokio, a member of the House of Peers.

AN ABDOMINAL WICK.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 1891.

BY ROBT. T. MORRIS, M.D.,
OF NEW YORK.

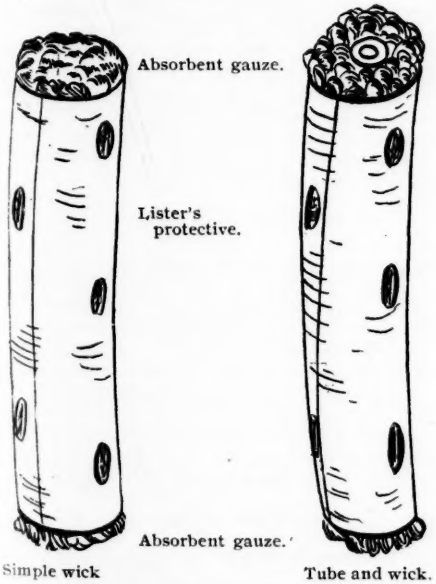
In my first sixty-three laparotomy cases, dependence had been placed upon a drainage tube that was so efficient, so ready at hand, and so simple in its workings that I thought it good enough to be patented. That drainage tube was the patient's intestine, running through the middle of the great lymph bag of the abdomen, and ready to abstract from the sac any collection of fluid that was enticing to microbes, and to set it out of doors where their fatal breath would be exhaled into valueless space as they fought for possession of the sports.

Deliquescent salts passed through the alimentary canal or injected into my drainage tube by way of the anas had cleared the great lymph sac by osmosis so regularly and with such ease that any other sort of tube seemed to be a superfluity.

But one day this fine drainage tube failed. The case may be spoken of unpoetically as "number sixty-four," in order to avoid the identity that goes with initials. There had been a moderate degree of oozing from adhesions after the removal of her large ovarian cyst, but this was not disturbing to my assistants at the hospital, who had often managed similar cases without a ruffle of anxiety as to the outcome. This patient's bowels, however, failed to respond to the seidlitz powder on the following day. Then a large dose of Rochelle salts was given without effect. The patient was rapidly developing a septic peritonitis, and continued attempts at getting an evacuation from the bowels by means of Rochelle salts by mouth and by rectum were failures. Finally I reopened the abdominal cavity and out ran a thin wicked stinking fluid that had caused all of the mischief, but it was too late and the patient gradually failed and died. Her family and her physician had put confidence in me and that was what I had done for them. An artificial drainage tube introduced at the time of the operation or at the beginning of the peritonitis would probably have saved the patient's life, and I should have been spared remorse; but if one could have all experience at once it would not be necessary to go to the bottom of such a dark well for truth. I could not believe in time that the patient's bowels were not going to act as other bowels under similar circumstances.

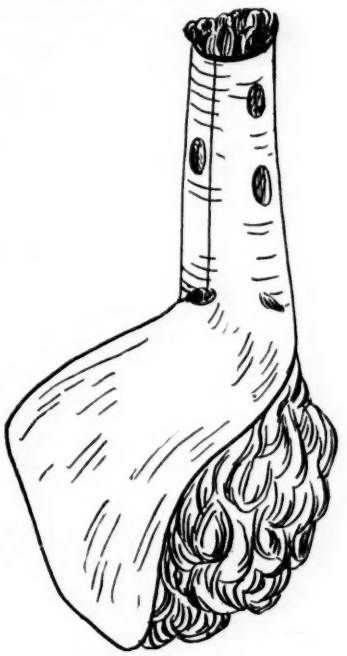
My reasons for not using artificial drainage tubes after abdominal operations had been good ones. I had known of several fæcal fistulæ that had followed the use of hard tubes, and secondary infection can easily take place through the stright and narrow way that leads to destruction. Soft tubes collapse. Gauze used for abdominal

drainage may become so firmly adherent to the intestines that its removal means peril for the patient. Then again I know that the introduction of artificial drainage tubes mean a good deal of extra trouble for the surgeon. Of course, no one cares how much extra labor and trouble he is put to if he can thereby save life and prevent suffering, but it seemed unnecessary, judging from my facts in experience up to the time of losing the patient just referred to. Since that time I have occasionally thought it prudent to use artificial drainage apparatus, and to avoid the dangers of hard and soft tubes, and of unprotected gauze. Wicks of the form here presented were used. The simplest wick consists of a little roll of absorbent bichloride gauze, around which is wrapped a couple of thicknesses of Lister's protective oiled silk. The gauze protrudes a trifle from each end of the cylinder, and a few little holes snipped through the protective allow serum to reach the gauze elsewhere. In certain cases where injections through a tube are desirable the soft rubber tube can be surrounded with this wick. When a large gauze packing for the pelvis is needed, an apron of the silk can expand out over the gauze and protect against intestinal adhesions. The wick acts by capillary attraction; the silk wrap will not irritate the peritoneum and the whole thing is so soft that it adapts itself to curves readily, and I doubt if it will cause fæcal fistulæ. The end of a wick which



Simple wick Tube and wick.

projects at the external opening of the wound should be covered with enough absorbent cotton or gauze to hold all fluid that is coming from below. In the pan which I now fill with water a row of these wicks is introduced. And as you see, they empty the pan in a few moments by siphon action. They would empty it almost as quickly if each one lead up into a bunch of absorbent cotton or gauze. A little wick as big as a lead pencil will take pints of fluid out of the abdominal cavity and transfer it to the absorbent medium outside. When the wick is at work it is important for the patient to remain upon her back, for if intestines are not inflated with gas the fluid rises naturally to the anterior abdominal wall, instead of settling, as many surgeons suppose, in the region of Douglas' pouch. If the patient turns upon her side the fluid rising to the highest point will be out of reach of the wick. The relative positions of peritoneal exudation or of blood serum and intestines will vary with the amount of gas in the intestines, but ordinarily immediately after work upon abdominal contents it may be observed that all free fluid is rising toward the anterior abdominal wall, and that is why the little holes are snipped through the silk of the wick at various points.



Apron and wick.

My drainage tube No. 1, is still the intestine. My drainage tube No. 2, is the wick, and this row of wicks at work in the pan of water is speaking more forcibly than I can to you who are observers.

133 W. 34th St.

PROF. REURERS, of Berlin, has used the cantharadinate of potassium (Liebreich's remedy) in a severe case of diphtheria, with prompt and favorable results. Reurers was led to try the remedy because of its effects upon swollen and infiltrated tissues, believing that it might have a specific action upon the diphtheritic membrane. The favorable results in the single case in which it was tried will lead to further observations.

AN open competitive examination of candidates for junior assistant physician in any of the State hospitals and asylums, will be held at the office of the Civil Service Commission, Albany, N. Y., Thursday, August 20, 1891, commencing at 10 o'clock A.M. A candidate for the position must be a citizen of the State of New York, at least 21 years of age, and have had at least one year's experience in a hospital, or three year's experience in the general practice of medicine. For application blank, address the Secretary of the New York Civil Service Commission, Albany, N. Y.

JOHN B. RILEY, Chief Examiner.

FURTHER PROGRESS IN MEDICAL EDUCATION IN NEW YORK.—The Medical Department of the University of the city of New York makes certain special announcements this year which should have a very general interest, indicating as they do a decided advance in educational methods. First: The Faculty have placed the college upon a true university basis; that is, the pecuniary interests of the college have been put entirely in the hands of a body separate from the Faculty, while the latter receive fixed salaries, and are free to give their time and energy to advancing the standard of the curriculum unincumbered by financial care. This step makes the Faculty quite independent of the number of students who may attend the college classes.

A second change consists in making the three years' course obligatory; and a third, perhaps the most important of all, consists in the introduction of the recitation system in place of the didactic lecture during the first and part of the second year.—*Medical Record.*

A DOMESTIC STERILIZER.—There are few houses in which a ready sterilizer is not at hand, namely the kitchen oven. The heat which can be generated in this culinary appliance would be more than sufficient to destroy those forms of germ life which are inimical to wound treatment. With a clean receptacle at hand, into which towels and other appliances required for the purposes of an operation could be placed, the kitchen oven could be relied on to effect the necessary sterilization of these with convenience and dispatch. Thus as an improvised "sterilizer" we can easily conceive of the occasions when a surgeon would be glad of the assistance of the kitchen oven.—*Medical Press and Circular.*

PHYSICO-CHEMICAL RESEARCHES ON THE ALIMENTARY FEATURES OF MILK.—In an interesting communication to the *Journal de Médicine de Paris*, Jolly calls attention to the necessity of a due proportion of phosphate of lime in milk, in order that it shall be capable of maintaining nutrition. Milk, to properly nourish an infant, and supply a sufficient quantity of phosphate of lime for the purposes of ossification, should contain at least 1.25 G. of phosphate of lime per litre. The needs of the infant economy are abundantly provided for by normal human milk, which contains about 450 G. of mineral constituents per litre, of which about one-half, or 225 G., is phosphate of lime. He cites the following cases illustrating the foregoing:

First Observation.—A nurse, aged 23 years, had been delivered about three months before. She had nursed a child twenty days. At the beginning the child had gained between 13 and 19 G. Towards the twentieth day it was observed that it had lost 26 G. in two days, and 300 G. on the weight which it had at birth. The nurse was changed and the child improved. An analysis of the nurse's milk showed it to contain the fat, casein and sugar in nearly normal proportions, while the mineral salts were only 1.50 per 100, or about 0.75 G. of phosphate of lime per litre.

Second Observation.—The nurse, a Breton of 24 years, of average height, well proportioned, appeared to enjoy perfect health. Her milk per 1,000 G. contained: casein 35.00; fat 43.30; milk sugar 51.80; mineral constituents 1.60. The child increased only about 7 G. per day, and at the end of three weeks, for several days, it lost 15 G. per day. The nurse was submitted to a phosphatic treatment. At the end of four or five days the child was seen to pick up, and after the eighth day gained regularly 20 G. per day. It need only be stated that the phosphate administered was not the phosphate of lime.

Third Observation.—The most feebly mineralized human milk which Jolly has met with, merits attention. Its composition per 1,000 was as follows: Casein 8; fat 74; milk sugar 54: mineral constituents 0.40. This milk, extremely rich in fat, was extraordinarily poor in casein and mineral salts. The nurse was an obese woman of 32 years. She had a freshness of complexion, and amplitude of form, which is generally considered as representing the very type of vigor and health. Like most persons who have a tendency to fatty degeneration, this woman used mostly farinaceous food for alimentation, to the exclusion of meat. It goes without saying that the child which she nursed sank steadily. Attention is called to this milk for the following reason: The physician is frequently called to assist families in the choice of a wet nurse, and he is generally contented with a physical examination of the milk. Now, in the case in question, the milk had a creamy and rich appearance which was certainly deceptive as to its nutritive value.

The phosphatic composition of the milk of the cow similarly undergoes considerable variations, dependent upon the quality of the food and the abundance of the lacteal secretion. While it is not uncommon to find milk containing 4 or 5 G. of phosphates, Jolly has met with a natural milk, not adulterated, which, while it contained the organic constituents in nearly normal proportions, had only 1.05 G. of the different phosphates per litre; that is to say, a quantity absolutely insufficient to serve usefully as a food for an infant.

The preceding examples are intended to show that the mineral richness of woman's milk, and cow's milk, are not always so great as some analyses seem to indicate; that the phosphatic richness of a milk has not only a considerable importance with reference to ossification in the child, but also as to its general growth.

In consequence, the determination of the phosphoric acid in milk must be made, before its nutritive value can be known.—*Journal de Médicine de Paris.*

A NEW private policlinical institute of some importance, and on a large scale, has just been opened in Berlin. It is to go by the name of the "Johanneum." The instruction is to combine hospital practice with clinical instruction and theoretical research. It contains eighty beds, is furnished with laboratories, microscope rooms, etc., an electro-mechanical institute, and a lecture theatre, in which courses are to be given by Professor Eulenberg on diseases of the nervous system; by Professor Zülzer on diseases of the kidneys and bladder; and by Dr. Scheimann on diseases of the nose and throat.

CALMATIVE FOR HYSTERIA.—

℞. Chloral hydrat.
Sodii bromid., āā ℥j.
Ext. Hyoscyami, three-fifths gr.
Ext. cannabis indicæ, three-fifths gr.
Mucil. acaciæ, ℥ij.

M. S. Dose, 2 to 4 drachms, every half to one hour, in a cup of orange-flower water. Specially useful for hysterical patients who complain of night terrors and insomnia.—Grassett, *La Méd. Moderne; Times and Register.*

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JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
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CHICAGO, ILLINOIS.

All members of the Association should send their Annual *Dues* to the *Treasurer*, Richard J. Dunglison, M.D., Lock Box 1274, Philadelphia, Pa.

BY-LAW IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

LONDON OFFICE, 57 AND 59 LUDGATE HILL.

SATURDAY, JULY 25, 1891.

ETIOLOGY OF TETANUS.

A recent communication by SANCHEZ-TOLEDO to the *Société de Biologie* of Paris, recalls this subject.

The first bacteriological work upon the etiology of tetanus was that of NICOLAIER in 1884, who then described his earth bacillus, which has since come to be recognized very generally as the tetanus bacillus. NICOLAIER found that tetanic symptoms followed the introduction under the skin of mice, rabbits and guinea pigs, of soil from streets and fields. In the pus which formed at the site of the inoculation the tetanus bacillus was found together with other microörganisms. NICOLAIER did not obtain a pure culture, but KITASATO and others afterwards succeeded in producing pure cultures of this bacillus. The difficulties met by the earlier workers with this microörganism seem to have been due to their failure to recognize the anærobic character of the organism. It is now clearly established that the bacillus ceases to be virulent if exposed to oxygen.

In attempts to produce cultures of NICOLAIER'S bacillus, other anærobic bacilli are usually found contaminating the cultures. Some of these bacilli, like NICOLAIER'S, are spore producing, but the spores of the tetanus bacillus appear earlier than those of any of the others. Now, since spores can withstand a temperature greater than that of the fully developed bacillus, the way was open to purify the culture by subjecting it to such a degree of heat as would destroy bacilli but not destroy the spores, at a time when the spores of the tetanus bacilli had made their appearance, and before the spores of the other organisms had developed. This method was elaborated by KITASATO, and pure cultures obtained.

It has been observed that the tetanus bacillus is to be found only in the immediate vicinity of the point of inoculation, and never in the blood or other tissues of the animal. This would seem to indicate that the effects were due to chemical products formed at the seat of inoculation.

Several years ago BRIEGER obtained from an impure culture of the tetanus bacillus a ptomaine which he called tetanine, and which, when injected into animals, particularly mice, produced tonic and clonic spasms of a tetanic type. Later, he extracted from the amputated arm of a man suffering with tetanus a ptomaine, apparently identical with his tetanine. More recently BRIEGER and FRÆNKEL have separated a toxalbumin from pure cultures of the tetanus bacillus, to which they have given the name tetano-toxine.

VAILLARD and VINCENT, in January, 1891, announced that pure, sporulated cultures of the tetanus bacillus, freed from their toxines, and injected in considerable quantities under the skin of susceptible animals, did not develop at the point of inoculation, nor produce tetanus. It seemed from their observations, that until the organism had grown for some time in an artificial culture medium, it was not capable of producing the disease, which was accounted for by finding that no poison was developed until some time after the organism had begun to grow, the production of this poison appearing to go on simultaneously with the formation of a peptonizing enzyme. A month ago, SANCHEZ-TOLEDO, having repeated the experiments of VAILLARD and VINCENT, reported his results to the Société de Biologie.

SANCHEZ-TOLEDO subjected pure cultures of the NICOLAIER bacillus, in bouillon and gelatine, to temperatures of 70° C., 80° C., and even 90° C., for an hour, on a water-bath. At the same time,

he subjected to the same conditions control tubes containing filtrations from pure cultures of the bacillus, *i. e.*, solutions of the toxines, freed from the bacilli. Inoculations of considerable quantities of the contents of the control tubes produced no effect upon animals, proving the destruction of the toxines. Nevertheless, the pure cultures remained active, as the inoculation of one-half c.c. killed guinea pigs in twenty-four hours, and one-tenth c.c. killed mice in forty-eight to sixty hours, with tetanic symptoms.

He also secured cultures free from toxines by washing thoroughly with sterilized water through a Chamberland filter, after the manner adopted by VAILLARD and VINCENT. Ten c.c. of bouillon or agar culture was in this way washed with six to ten litres of water, and the remaining culture diluted with six c.c. of pure water. One-twentieth c.c. of this mixture inserted under the skin of mice caused death with tetanic symptoms in from forty-eight to eighty hours. One-fourth c.c. killed a guinea pig in less than eighteen hours with tetanic symptoms. In all the experiments the tetanus bacillus was found at the point of inoculation as was proven by microscopic examination, culture and inoculation. Moreover, it was found there in pure culture, without any other microörganisms, showing that tetanus could be produced by this organism without the intervention of any other form of bacterial life.

The disagreement, real or apparent, between the observations of SANCHEZ-TOLEDO and VAILLARD and VINCENT, awaits explanation.

We shall look forward with interest to the establishment of one or the other of these views, or to filling of the gaps by which they may be reconciled.

It can hardly be doubted, however, that Nicolaier's bacillus is a cause of tetanus, but the whole history of the germ shows that the conditions of its growth are as yet unknown, and probably are quite complex. It is a knowledge of these conditions which will give the predisposing causes of tetanus, and explain why, notwithstanding the wide distribution of this germ, that tetanus is so uncommon, and why tetanus sometimes makes its appearance in epidemic form, as it did in the United States in 1882, at which time the over-zealous newspaper reporter threw the blame on the toy-pistol.

TUBERCULAR INFECTION BY MILK.

DR. OLLIVIER, one of the physicians of the Hôpital des Enfants Malades, at Paris, has recently read a paper before the Academy of Medicine, on the dangers of milk-tuberculosis. He states that he was called upon to go to Chartres to consult concerning a case of tubercular meningitis. The patient was a young lady, aged 20, whose family history and personal antecedents were excellent, and whose hygienic surroundings were believed to be all that could be desired. But she had been placed at a small boarding school at Chartres, which, upon investigations proved to have been unusually afflicted by tubercular disease. During the preceding four years six out of thirteen scholars had successively or simultaneously become tuberculous; two of the cases having been tabes mesenterica. This was manifestly the place where the patient of DR. OLLIVIER had contracted her disease, which not long afterward resulted in death. An inquiry was instituted to ascertain the cause of this unfortunate series of cases, and it was found that the milk supply of the school had for some years been contributed to by a cow having a tuberculous udder; this cow had been brought every day to the convent to be milked and her milk had been consumed unboiled by the inmates. This non-boiling of the infected milk was held by DR. OLLIVIER to be the sufficient explanation of the series of cases at the school, and was made the basis of an argument in favor of the invariable boiling of milk, whose source has not been sanitarily proved to be free from tubercular contamination. In the discussion following the paper, DR. NOCARD stated that he had formerly expressed the opinion that all milk, from any unknown or suspected source, should be boiled before being used as food. But he now went further and advanced the necessity of a rule that no milk, whatever may be its source, should be consumed in the raw state. He related a case that had only a short time before come under his observation. He was called upon to examine the lymphatic glands of a calf, apparently in healthy condition, which, much to the surprise of its owner, had died after only a few days' illness. These glands were found to be full of tubercular bacilli. Not long after this discovery, the mother of the calf—a fine appearing animal, and the winner of several prizes at

shows—also died, and the udder, lungs and glands were examined and found to be tuberculous. And this is not by any means the first instance that handsome, prize-winning cows have been the unsuspected subjects of that disease. There is room here for much investigation as to the point at which the milk produced by these animals becomes dangerous by the conveyance of bacilli into the human alimentary canal, and what, on the other hand, are the elements in the human economy which grant immunity to such large proportions of exposed persons. Another line of investigation is also promised, in regard to qualities of condensed milk, which can hardly fail of interesting the profession, especially in those cases where the condensing factories are known to receive milk from dairies containing a number of tuberculous kine. This research is about to be undertaken by one or more of our own State Boards of Health.

LEGISLATION AGAINST THE IMPORTATION OF COMMUNICABLE DISEASES.

On April 1, a new Federal immigration law went into operation, whose ostensible purport is the shutting out of imported infectious disease, liable to be sent hither, from European ports, especially. The preliminary trials of the working of the new law have already been set in motion at the port of New York. Already there have been some cases of pulmonary tuberculosis and alopecia debarred from entry. Some little time will necessarily be spent in legal contest and opposition by the friends of indiscriminate immigration before the holding or effective properties of the law will be known. It is believed, however, that the act is sufficiently strong to prohibit some of the undesirable elements which under the old law were free to enter. One of the peculiar features of the new act is that it does not recognize an immigrant as landed until he has been passed by the Landing Bureau, of the Department of the Treasury. The steamship companies are thus made the custodians of all persons who are denied entry for physical reasons; and they become responsible for the care and maintenance of those persons so long as the importing vessel remains in port, and on her departure she must take away the rejected material. As a natural consequence some of the companies have already advanced their rates for steerage traffic, which, of itself, will tend to purify the stream of immigration. Another salutary influence of the new law is that the steamship companies will become more cautious about the class of people they permit to come to this country on their vessels, and it may lead up to a preliminary physical examination by competent medical inspectors. When this good end shall have been accomplished, a very weak spot in our international relations will have been touched—a spot that has been repeatedly pointed out in our medical and sanitary contemporaries.

In British America, medical attention has been turned to the frequent importation of leprous cases, from Asia. Medical men have recently investigated such cases at Victoria, British Columbia, and have recommended that their increasingly rapid importation should be checked by legislation. It is stated that there has been a considerable spread of the disease during the last year in nearly all the Pacific cities of the Dominion, and has reached a point where its further advance must affect disastrously the prosperity of British settlements there.

IMMIGRATION AND PUBLIC HEALTH.

While our sanitarians and public health authorities are deeply concerned with the possible importation of some cholera infected rags or clothing containing the germs of small pox, it may be well to call their attention to another and very serious disorder affecting the public health.

The treasury bureau of statistics has recently made a report on immigration, from which we excerpt the following figures: The number of immigrants from 1789 to 1820 is estimated at 225,000. From that time the number for each decade is as follows: 1820 to 1830, 143,400; 1830 to 1840, 599,100; 1840 to 1850, 1,713,200; 1850 to 1860, 2,598,200; 1860 to 1870, 2,466,700; 1870 to 1880, 2,944,600; 1880 to 1890, 5,176,200.

It scarcely needs comment to show the enormous influence that such a vast mass of immigration has upon the health, welfare and prosperity of this country. A number equal to one-twelfth of the entire population of the United States, and equal to the population of the great State of Pennsylvania, added to this country in a single decade! It is a notorious fact that the

quality of this vast stream of humanity has diminished with each decade, and in just about geometrical ratio with its increase in numbers. What a change from the days when men set out across the seas to escape persecution or to secure wider civil and religious liberty, to the time of "assisted" immigration, when men leave their country not for their own good, but the good of their neighbors. Can we estimate the amount of crime, ignorance and insanity that will be inflicted upon this country in the defective descendants of these wretched beings?

Every town of any considerable size in Europe has at least one agent of a steamship company who are industriously circulating false stories regarding the rates of wages in this country and the ease with which employment is obtained. These agencies, together with the influence of relatives already living in this country, and the "assistance" freely given by local officers to undesirable persons, has pushed the annual increment to enormous proportions. The absorption of such a mass of reputable and fairly well-to-do persons would severely tax the resources of even this great country, but what shall be done with this vast mass, when the majority are found to be mentally, morally and physically far below the average of mankind?

In our opinion, it is none too soon to grapple with this great problem. Already the public service of our large centers of population are beginning to struggle under the vast mass of criminality, pauperism and insanity poured into this country from the continent of Europe.

Recently the proposition to add a medical officer to the cabinet has been freely discussed, and much has been said pro and con. To our mind, the urgent need of such an officer is shown if he is to deal with no other subject than that of immigration, a question fraught with mighty consequences to this nation, and beside which questions of war, famine and trade sink into comparative insignificance.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

This body is constituted of the several specialty organizations of this country; and convenes once in three years in Washington. The next meeting will be held in that city September 22, 23, and 24.

These societies embrace in their membership many of the leading and most enthusiastic investigators and observers in our profession. In addition to the triennial Congress each of these societies hold an annual meeting, where papers are read, notes compared and a résumé of the year's progress is compiled for publication in handsome volumes. Unfortunately these volumes of transactions are issued in quite small editions and in distribution rarely reach beyond the limited membership of the everal societies.

We are glad to note that very many of the members of these organizations are also active members of the American Medical Association. We rejoice at their affiliation, for they are the men who are best known to the great body of general practitioners; they are the men who realize most fully the value of society work, of communion one with another. This gathering of men engaged in diverse pursuits, but still members of our profession, is beneficial to all. It broadens the mind of every man who attends the meeting, and as their work is reflected through the journals, does good to every practitioner.

It is frequently charged that specialists are narrow in their views, that everything pertaining to their chosen department is magnified at the expense of the whole. The men who attend general gatherings of members of the medical profession are not the ones afflicted with obliquity of vision. They know that personal contact and observation will often change an opinion.

The social enjoyments of these occasions go far in lightening the drudgery of practice. Each meeting is remembered as one of the green spots in professional life. Attendance pays in length of days, lessening of wrinkles and improvement of digestion.

THE ARIZONA CLIMATE IN WINTER FOR INVALIDS.

DR. G. S. LIGGETT, of Oswego, Kan., writes to the *New York Medical Journal* concerning the climatic conditions of a part of Arizona which was visited by him during the winter of 1890–91. He spent most of his time at a point about forty miles distant from Tucson, in the foot-hills of the Catalina Mountains, and he reports that he found there conditions and qualities that commend themselves to consumptives and other invalids. He says: "For an outdoor winter climate

I do not think that the region can be beaten, and high up in the mountains there are magnificent places for summer resorts, and the time ought not to be far distant when our physicians will send their patients westward rather than 'across the pond' for a change of climate and scenery." He took thermometric observations from October to and nearly through the month of January, 1891, and he prints the record in full for the benefit of physicians. There was only one cold snap, occurring in the middle of January and lasting only three days. The wind from the snow clad mountains was at times quite cool. The hardest rains were in the night-time, and there was one little flurry of snow. They had three rain storms during the three months, but it was only during the time the rain was falling that the invalids needed to remain indoors. Thousands of song-birds have their winter quarters there. The party was housed at a ranch forty miles, by stage-route, from the railroad and up among the live-oaks. Their supplies included the choicest of mutton and beef, and abundance of fresh vegetables all winter, seasoned with an appetite that could enjoy everything that came before it. They aimed to lead an exclusively out-of-door life, walking, riding and hunting. The roads were excellent, and game—as quail, antelope, deer, coyote and wild hogs—was plentiful. There was no dampness nor sign of mold anywhere. The soil was so dry that the occurrence of rain was a decided advantage to the roads. The hours of sunshine were many, but no proportionate record of their number has yet been taken. The scenery is variously attractive, with views of *mesa*, foothills, mountains, valleys and cañons, and there was no lack of interesting objects to visit and engage the mind and attention of an invalid who was desirous of passing his time in the open air.

THE ISLAND OF ST. KILDA.—A cablegram from London, July 21, 1891, to the daily papers, calls attention to a mysterious malady which is affecting new-born infants on the little island. It says:

"The symptoms of the disease appear about the eighth day from birth. The hands close and remain rigid; a kind of lockjaw follows; the muscles of the face contract; the mouth is closed, and in a few hours more death ensues. From the appearance of the first symptoms until dissolution, twenty-four hours elapse. One family have lost twelve children in this way, and all the families on the island have lost from two to eight children by the singular disease. The first-born of each family generally lives. The doctors are inclined to attribute the malady partly to the habit among the islanders of intermarrying among blood relatives, and partly to the fact that the diet of the people is limited almost entirely to oily food, such as birds and fish. There are only about 100 people on the island, and they are so closely related as to really form hardly more than one large family."

This condition of affairs has long been known on St. Kilda. The influence of the intermarrying, however, is negatived by the fact that children of the natives of St. Kilda born elsewhere than on the island, do not become affected with trismus neonatorum.

According to Holland, trismus neonatorum prevails so extensively on the island of Heimaey, one of the Icelandic group, that the population is maintained almost entirely by immigration.

On this island, as at St. Kilda, the diet is almost exclusively one of fish and sea birds, and the custom prevails of feeding the infants this strong and oily food soon after birth. When, in addition to this fact, the remarkable uncleanliness of the natives is recalled, we may certainly be justified in supposing the cause of the tetanus to be in a poison contained in the food.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

An official record of the four executions by electricity at Sing Sing prison on July 7th, has now been published, and it fully confirms the correctness of the first newspaper reports as to the admirable manner in which they are conducted and the instantaneousness and painlessness with which death was in each instance produced. In accordance with the provisions of the new statute the warden of Sing Sing has sent to the county clerk formal certificates of the four executions accompanied by a report of the observations of Dr. Carlos F. MacDonald, President of the State Commission on Lunacy, and Dr. Samuel B. Ward, of Albany, who served as the official physicians at the executions.

In their report the physicians state that all of the condemned walked into the execution-room unaided, with firmness, and without assistance, quietly seated themselves in the electric chair and submitted without resistance to the adjustment of the retaining straps and electrodes; that in each instance unconsciousness was produced instantaneously by the closure of the circuit, was complete, and persisted without interruption until the heart's action had entirely ceased and death had certainly occurred; and, thirdly, that an autopsy was made in each instance as soon as practicable by Dr. Ira T. Van Gieson, of New York, under their supervision, with the result of revealing the same gross changes in the blood and tissues previously observed in cases of death by the strong electric currents. They then stated that specimens, especially of the blood and of the nervous system, were procured for microscopic examination, the results of which would be presented as soon as the examinations were completed.

In conclusion they congratulate the warden on the completeness in all their details of all the preliminary arrangements, on the uniform good order and decorum, which prevailed during the trying ordeal, and on the resulting demonstration of the rapidity and painlessness of this method of inflicting the death penalty. "The experience of to-day," they say, "has proved to our satisfaction that this method is superior to any other yet devised."

The grand jury has made an appeal for a change in the condition of the inmates of the city asylum for insane females on Blackwell's Island, which certainly ought to be heeded by the authorities, and it is to be hoped that the Board of Estimate and Apportionment will now provide for the nrgent necessities of the case. For a long time past this institution has been greatly overcrowded, so that 1,700 women have been huddled together in buildings originally intended for 1,200 at the outside. While there is urgent need for repairs and improvements in the buildings on Blackwell's Island, it would seem far wiser, rather than to increase the capacity of these buildings, to make suitable provisions for the overflow at the city's farm for the insane which was established a few years ago at Central Islip, on Long Island, a very salubrious rural district situated midway between the ocean and Long Island Sound, and which has thus far proved a very successful experiment.

Dr. Wm. J. Morton, the well-known specialist in diseases of the nervous system, has expressed the hope that the city of New York may at some future time have all its insane cared for in some such manner as at the colony for the insane at Gheel, in Belgium. "There," he recently said, "the picture is unlike anything to be seen in America or elsewhere in Europe, and therefore valuable for its contrasts and its suggestions. It is unusual to see the insane living their lives in natural surroundings. Gheel teaches us the possibilities that exist in the treatment of the insane. It shows us that they will work cheerfully if well managed, and that they may be treated, under proper precautions, with great liberty, and not abuse it. It teaches us, moreover, how woefully wide our advanced civilization is from the mark it might attain to in the treatment of insanity.

"The new and stringent immigration laws, providing for the examination and return on the vessels which brought them of all pauper and diseased emigrants landing in this country, have not gone into effect any too soon. For years it has been notorious that such dependent persons have been shipped to the United States by municipal authorities and so called benevolent societies in the old world; and during the past seven years the New York State Board of Charities has returned to their homes in Europe no less than 1,374 permanently disabled and helpless alien paupers who had been sent here to become a burden upon the tax-payers of this State. In the reports of the Board, these 1,374 persons are divided into the following classes: Lunatics, imbeciles, feeble-minded, vagrant and disabled, decrepit, cripples, blind, epileptic, paralytic, deaf-mutes, and otherwise infirm. The cost of removing these persons from this State to their homes in Europe ranged from $2,451 to $6,708 per annum, but it is probable that in no other way could the Board have saved more for the people of New York. Said the Board in its report for 1890:

"Estimating the duration of life of this class of dependents, had they been allowed to remain in this country, at the minimum average of fifteen years, an ultimate saving of $2,427,360, independent of the expense of housing them and providing salaried officers for their caretaking, is definitely proved, and an illegitimate burden on our people is thrown back where it originated, and where it justly and naturally belongs.'"

According to the bulletin of the New York State Board of Health, the mortality in this State in the month of April was the largest ever recorded. This increase was due to the epidemic of influenza, the deaths from which numbered nearly 5,000. The total number of deaths was 13,981, or 1,500 greater than in January, 1890, when the largest number of deaths ever reported up to that time for one month was recorded. This represents an annual death rate of 30 per 1,000 of the population.

One night, not long since, a man was brought to Bellevue Hospital with a slight wound over one eye, and in a state of unconsciousness, which was believed to be due to intoxication. The next day, however, he died It was learned that he had been stabbed in the eye with an umbrella, and the autopsy showed that the ferrule had penetrated nearly three inches into the brain, producing fatal hæmorrhage. P. B. P.

New Surgical and Pathological Society.

Getting the Hospital and Ambulance Service in Readiness for the Meeting of the Grand Army of the Republic.

To the Editor:—The profession in Detroit are at present interested in making arrangements for the medical and surgical care of the veteran soldiers who meet in this city early in August. A committee composed of representative practitioners, under the chairmanship of Dr. E. L. Shurly, have the work in charge. They have divided the city into ambulance districts, established medical relief stations at intervals along the line of march, and gotten the hospitals into special condition for the reception of the old soldiers who may happen to be taken sick or be injured while here. The demands of irritable bladders and prostates are to be particularly looked after by the erection of a large number of latrines where they will be most accessible. It is said that in some cities which have been crowded during the meeting of the G. A. R., much suffering has resulted from the neglect to erect proper conveniences. The medical men of Detroit will spare no pains to make the reunion of the soldiers successful and pleasant.

A new medical society has been organized here. It is known as the Michigan Surgical and Pathological Society. It adopts the Code of the American Medical Association, and has for its object the encouragement of surgical and pathological research, and the maintenance of a museum of gross pathology—a department of knowledge which many doctors in Detroit and Michigan think has been neglected, and has suffered by the greater en-

couragement which has been given to microscopical research.

Dr. Hal C. Wyman is the President, Dr. Lewis E. Maire, Vice-President, Dr. W. R. Scurr, Secretary, Dr. Wm. J. Hamline, Treasurer, and Drs. F. S. Hough and R. S. Linn, Curators. The presentation to the Society of a pathological specimen is a requisite for membership. A cash prize will be given once a year for the best original paper on some surgical or pathological topic.

X.

Detroit, July 28, 1891.

NECROLOGY.

Frank Hamilton Potter, M.D.

Dr. Frank Hamilton Potter, of No. 273 Franklin street, Buffalo, died July 16, after an illness of ten days' duration.

He was the only son of Dr. William Warren Potter, of 284 Franklin street, and was born in Cowlesville, Wyoming county, January 8, 1860, being in his thirty-second year at the time of his death. In 1882, when he was twenty-two years of age, he was graduated from the Buffalo Medical College. Prior to this time he had served as resident physician in the Rochester City Hospital for two years. In 1883, at the organization of the Niagara University, he was appointed clinical assistant to the chair of surgery, and subsequently held the position of lecturer in anatomy and laryngology. He at one time was a member of the surgical staff of the Sisters of Charity and Emergency hospitals. He first began the practice of general medicine, which he continued for a time, but afterward gave it up for the special field of laryngology, for which he had fitted himself in the schools of both this country and Europe. But recently he was appointed clinical professor of laryngology of the University of Buffalo. He was also associate editor of the Buffalo *Medical and Surgical Journal* with his father. He was a member of numerous medical societies, among which were the Buffalo Medical and Surgical Association, Erie County Medical Society, Medical Society of the State of New York, Buffalo Pathological Society, and Obstetrical Society. He was also a member of the Saturn and Thursday clubs. During the year 1890 he was secretary of the Laryngological Society of the American Medical Association, and he was recently chosen by the council of the American Laryngological Association for membership in that organization.

In political life he had taken a small part, having served two terms as civil service commissioner. He was removed from that office by Mayor Becker, along with Mr. Loomis, but was reinstated when Mayor Bishop was elected. This office he resigned about a year ago, on account of other business duties.

In 1887 he was married to Eva, daughter of Lars G. Sellstedt. To them two children were born, both of whom, with his wife, survive him. He was an active and hard-working member of his profession, and had until recently enjoyed the best of health. A week ago last Sunday he was taken ill, but was not compelled to take to his bed until Wednesday. It was then found that he was suffering from an enlargement on one side of the abdomen. On Saturday a surgical operation was performed, at which time nearly six ounces of pus were taken from the region of the colon. Blood poisoning had set in, and he failed rapidly, dying July 16.

Dr. John F. Groenevelt, of New Orleans, and an Assistant Surgeon in the Marine Hospital Service, at the quarantine station at Chandeleur, died of yellow fever on June 29. The disease was probably contracted by the deceased in the course of his official duty, while he was inspecting a steamer from Brazil. He had already seen quarantine service at the Cape Charles and at the South Atlantic stations. He was a graduate from the Tulane University in the class of 1889, and was regarded as a young surgeon of talent and great promise.

It was believed at the Bureau that he was fully acclimated by having had the yellow fever, and the detail is understood to have been made at his own suggestion.

This is the fifth officer of this service that has perished from this disease in the last decade.

Dr. Joseph Payne Logan, of Marietta, Georgia, died June 2, in the seventy-first year of his age. He was one of earlier vice-presidents of the American Medical Association, having held that office from 1860 to 1863. He was a Virginian by birth, was educated at Washington College, in State of nativity, and graduated in medicine from the University of Pennsylvania, in 1841. He practiced for a brief period at Baltimore, but made Atlanta the permanent field of his professional life. He was appointed Professor in the Atlanta Medical College, of the departments of Physiology and Principles of Medicine. He also edited the *Medical and Surgical Journal* of that city. He had been president of the Georgia Medical Association and of the Atlanta Academy of Medicine. He was for a time a member of the State Board of Health, in which capacity he contributed several valuable reports upon yellow fever and other epidemic diseases.

Professor F. W. Scanzoni died at Berlin, on June 13, in his seventy-first year. He was the well-known Professor of Obstetrics and Diseases of Women at the University of Würzburg, and author of one of the best of the pioneer "Lehrbuchs" on the sexual organs of women.

BOOK REVIEWS.

ST. THOMAS HOSPITAL REPORTS. New Series, Vol. xix. Edited by DR. HADDEN and MR. ANDERSON. Pp. 463, 8vo, cloth. London: J. and A. Churchill. 1891.

This handsome volume is not inferior to any of its predecessors—the actors may indeed change, but the stage, its wings, entrances and exits, and the shifting audience remain the same. The old story is retold, and interestingly too, of the great charitable work performed by this magnificent hospital, but it is the scientific portion of the book that will have the greatest interest for American readers. The first essay is one on the influenza epidemic of 1890, by H. P. Hawkins, M.R.C.P., which, although occupying 22 pages, the author has summarized in a single paragraph as follows:

"I believe, however, that we have gleaned nothing from this epidemic, save a more accurate knowledge of the rise of temperature, which we owe to the use of the clinical thermometer, and that we know less of the cause and origin than in the case of any other specific fever."

Fifteen hundred cases of influenza were seen by the St. Thomas' staff, and their records are utilized in this paper.

Mr. Mitchell Clark reports a case of total transverse lesion of the cord, upper dorsal region, in which the patient survived the injury ten months. After a painstaking necropsy, fully set forth, he concludes by saying "that in cases of lesion in the upper part of spinal cord, there must be retained some connection of its lower parts with the intercranial centres, even when sclerosis of the pyramidal tracts is present, in order that muscular rigidity and increased tendon reflexes may occur," which is a distinctly John Bull method of stating a proposition, but clear, if one will reformulate it with the same terms.

Dr. Robinson presents a tabulated report, with an analysis, of all the cases of radical cure of non-strangulated hernia from 1879 to 1890—numbering 64. The favorite operation, as shown by the record, was that of Mitchell Banks, and the results show that 43 of the cases operated on, subsequently communicated with, replied to the inquiries sent; of 18 cases of congenital herniæ, 14 replied, and all of these were "cured;" of 11 cases of funicular herniæ 8 replied, and all of these were "cured;" of five cases of femoral herniæ all replied, three were cured and two relapsed; of 22 cases of acquired inguinal herniæ, there were 14 replies, of these nine cases were cured, and five relapsed. It therefore appears from these statistics, that a much greater number of the congenital cases were cured than of those having acquired hernia. The mortality was 4 out of 64 cases. He clearly points out the dangers of removing large sacs *in toto*, and urges that such sacs be divided high up, and the lower portion allowed to remain in the tissues unconnected with the abdomen.

Sir Wm. McCormac, in another part of the volume, gives his views on the subject, and thus concludes: "That in a large proportion of cases of inguinal hernia, especially those of congenital origin, a radical cure is possible, and that in femoral and umbilical herniæ of small or moderate size, the prospects of cure are good. Even where an absolute cure is not accomplished, a great gain is generally secured in the diminution of the hernial aperture, by which the retention of the hernia within the abdominal cavity becomes more practicable. Lastly, and most importantly, the operation, when properly performed, is scarcely dangerous to life."

There is a timely article by Mr. Leonard A. Bidwell, on the treatment of erysipelas by hypodermatic injection, and an interesting report by Dr. Cullingworth, of the In-Patient Department for Diseases of Women. Most interesting to physiologists is the report by Dr. Hadden and Mr. Ballance of the experimental observations on the brain of the monkey. These experiments were designed to show the effect *seriatim* of stimulation of the different convolutions, and were conducted at the Brown Institution, under the terms of a grant toward the expenses of the research by the Scientific Grants Committee of the British Medical Association. There is also an analysis of 708 cases of pneumonia by Dr. Hadden and others, and a very interesting account of forty-one fatal cases of osteo-myelitis by Mr. Mackins and Mr. Abbott, but our waning space admonishes that we must close our review of this volume, and in justice say to our *confréres*, "Well done! thou good and faithful." J. B. H.

HEREDITY, HEALTH AND PERSONAL BEAUTY. By John V. Shoemaker, A.M., M.D., Professor of Materia Medica, Pharmacology, Therapeutics and Clinical Medicine, and Clinical Professor of Diseases of the Skin in the Medico-Chirurgical College of Philadelphia, etc. Phila. and London: F. A. Davis. 1890. Price, $2.50.

Dr. Shoemaker has here given forth a work which may appeal to both the professional and lay mind; that is, it can be well understood by the intelligent non-professional, while much of its subject matter may well appeal to the physician. It may almost be termed a "popular science" treatise, and as such, will no doubt find welcome and an opportunity to do good. Dr. Shoemaker has certainly had a large experience, which admirably fits him for the proper handling of his theme. The book is pleasantly written, and is a credit to the publisher as well.

MISCELLANY.

AMERICAN ORTHOPÆDIC ASSOCIATION.—The fifth annual meeting of the American Orthopædic Association, will be held in the new reception room of the Arlington Hotel, Washington, D. C., September 22, 23, 24 and 25, 1891.

The office of registration of the Congress of American Physicians and Surgeons will be at the Arlington. The Association will be called to order daily at 9 A.M. Recess from 12 to 12.30 P. M. Adjournment at 2 P. M., or in time for the meeting of the Congress at 3 P. M. Exhibition of apparatus at the close of each day.

First Day—Tuesday.

1. The President's Address, Dr. A. B. Judson, New York.
2. The Orthopædic Work of the late Mr. Thomas, Dr. A. J. Steele, St. Louis.
3. Uniform Nomenclature in Orthopædic Surgery, Dr. W. R. Townsend, New York.
4. Two Cases of a Peculiar Type of Primary Crural Asymmetry, Dr. Henry Ling Taylor, New York.
5. On the Best Means of Preventing a Loose Joint, or Dangling Limb, after Resection at the Shoulder-Joint, with an Illustrative Case, Dr. W. R. Whitehead, Denver.
6. A Case of Spina Bifida with Partial Motor and Sensory Paralysis, Double Equino-Varus and Purulent Bursitis, Dr. H. Augustus Wilson, Philadelphia.
7. Congenital Club-Foot, with Absence of Great Toe and Continuous Bones of the Instep, Dr. T. M. L. Chrystie, New York.
8. A Case of Club-Foot, Club-Hand and Multiple Joint-Deformity, Dr. William E. Wirt, Cleveland.
9. On the Use of the Wrench in the treatment of Club-Foot, Mr. Robert Jones, Liverpool.
10. Operation upon the Concave Surface in Talipes Equino Varus, Dr. B. E. McKenzie, Toronto.
11. The After Treatment of Excision of the Knee-Joint, Dr. John C. Schapps, Brooklyn.
12. Gonorrhœal Rheumatism and its Treatment; Primary and Secondary, Mr. B. E. Brodhurst, London.
13. Atrophy in Joint-Disease, Dr. E. G. Brackett, Boston.
14. The Diagnostic and Prognostic Value of High Temperature in Chronic Joint-Disease, Dr. Robert W. Lovett, Boston.
15. On the Tests for Recovery from Joint-Disease, Mr. Robert Jones, Liverpool.
16. Apparatus for Making Traction, Dr. William E. Wirt, Cleveland.
17. Some Lateral Traction Fixation Hip Splints, Dr. A. M. Phelps, New York.

Second Day—Wednesday.

18. Rachitis in Adolescence, Dr. Bernard Bartow, Buffalo.
19. The Aspirator in Orthopædic Practice, Dr. Ap Morgan Vance, Louisville.
20. Congenital Misplacement of the Hip, with New Apparatus for its Treatment, Dr. A. M. Phelps, New York.
21. A Study of Atrophies, Dr. Roswell Park, Buffalo.
22. The Diagnosis of Pott's Disease, Dr. Robert W. Lovett, Boston.
23. The Differential Diagnosis in Pott's Disease, Dr. Geo. W. Ryan, Cincinnati.
24. Syphilitic Pott's Disease in Children, Dr. John Ridlon, New York.
25. Pott's Disease and Pregnancy, Dr. T. Halsted Myers, New York.
26. Paraplegia in Pott's Disease, Dr. E. G. Brackett, Boston.
27. Pressure-Myelitis in Pott's Disease, Dr. Albert Hoffa, Wurzburg.
28. Abscesses in Pott's Disease, Dr. Herbert L. Burrell, Boston.
29. Abscesses in Pott's Disease, Dr. W. R. Townsend, New York.
30. The Evacuation of Spinal Abscesses without Drainage, Mr. George Arthur Wright, Manchester.
31. Bilateral Lumbar Abscess, with a Case, Dr. James K. Young, Philadelphia.
32. The Benign Course of Abscesses in Pott's Disease under Efficient Mechanical Treatment, Dr. Newton M. Shaffer, New York.
33. The Value of Mechanical Treatment in Old and Neglected Cases of Pott's Disease, Dr. Henry Ling Taylor, New York.
34. The Mechanical Treatment of Pott's Disease, with an Exhibition of Apparatus, Dr. A. M. Phelps, New York.

Third Day—Thursday.

35. Malignant Disease of the Vertebræ Simulating Pott's Disease, Dr. A. B. Judson, New York.
36. Paralysis in Pott's Disease, Dr. Charles L. Scudder, Boston.
37. Prognosis in Pott's Disease, Dr. Samuel Ketch, New York.
38. Proposed Treatment of Pott's Disease by Wiring the Vertebral Processes, Dr. B. E. Hadra, Galveston.
39. The Operative Treatment in Spinal Caries, Dr. De Forest Willard, Philadelphia.
40. The Treatment of Pott's Disease with Especial Reference to the Early Stage, Dr. Bernard Bartow, Buffalo.
41. Pott's Disease in Adults, Dr. A. J. Steele, St. Louis.
42. Pott's Disease in Middle and Advanced Life, Mr. Howard Marsh, London.
43. Cervical Spondylitis, Dr. L. A. Weigel, Rochester.
44. The Prevention of Unnecessary Deformity in Pott's Disease, Dr. Royal Whitman, New York.
45. A Brief History of the Use of Suspension in Pott's Disease, Dr. Benjamin Lee, Philadelphia.
46. Recumbency in Pott's Disease, Dr. Ap Morgan Vance, Louisville.
47. Extension in Pott's Disease, Dr. B. E. Kenzie, Toronto.
48. Extension in Bed, Dr. Charles C. Foster, Cambridge.
49. Traction and Fixation in Pott's Disease, Dr. Reginald H. Sayre, New York.
50. The Treatment of Pott's Disease, Dr. V. P. Gibney, New York.
51. Comparative Value of the Present Modes of Treatment of Caries of the Spine, Dr. E. H. Bradford, Boston.

Fourth Day—Friday.

52. A Further Contribution to Typhoid Spine, Dr. V. P. Gibney, New York.
53. The Treatment of Congenital Dislocations of the Hip, Dr. E. H. Bradford, Boston.
54. On Elongation of the Ligamentum Patellæ as a Factor in the Production of Certain Knee Troubles and Difficulties in Locomotion, Dr. Newton M. Shaffer, New York.
55. Observations on Torticollis, with Particular Reference to the Significance of the So-called Hæmatoma of the Sterno-Mastoid Muscle, Dr. Royal Whitman, New York.
56. Ten Cases of Excision of the Knee Joint for Disease, and their Lessons, Dr. Joseph D. Bryant, New York.
57. Rheumatic Spondylitis, Dr. George W. Ryan, Cincinnati.
58. The Definition and the Scope of Orthopædic Surgery, Dr. V. P. Gibney, New York.
59. The Relations of Lateral Curvature of the Spine, and Flat-foot, Dr. Paul Redard, Paris.
60. Pathological Anatomy of Lateral Curvature of the Spine, Dr. F. Beely, Berlin.
61. Means of Recording Rotation in Lateral Curvature, Dr. E. H. Bradford, Boston.

62. A Contribution to the Etiology of Lateral Spinal Curvature, Dr. Charles L. Scudder, Boston.

63. Modifications in the Treatment of Lateral Curvature, Dr. E. H. Bradford, Boston.

64. Spastic and Infantile Paralyses, Dr. De Forest Willard, Philadelphia.

65. The Operative Treatment of Spastic Paralysis, Dr. L. A. Weigel, Rochester.

66. The Operative Treatment of Spastic Paralysis, Dr. Charles L. Scudder, Boston.

67. Additional Notes on Sacro-Iliac Disease, Dr. Benjamin Lee, Philadelphia.

Officers.—President, A. B. Judson, M.D.; Vice-Presidents, Ap Morgan Vance, M.D., George W. Ryan, M.D.; Corresponding Secretary, Samuel Ketch, M.D.; Secretary and Treasurer, John Ridlon, M.D., 337 W. 57th St. New York; Committee on Membership, E. H. Bradford, M.D., Arthur J. Gillette, M. D., Samuel Ketch, M.D., Benjamin Lee, M.D., L. A. Weigel, M.D.

AMERICAN DERMATOLOGICAL ASSOCIATION.—The fifteenth annual meeting will be held at the Shoreham Hotel, Washington, D. C., September 22, 23, 24 and 25, 1891.

First Day. Tuesday, September 22, 1891.

Business meeting (with closed doors) at 9:30 A.M. Report of Council. Nomination of Officers for the ensuing year. Appointment of Auditing Committee. Proposals for Active and Honorary Membership. Miscellaneous Business.

Morning Session at 10:30 o'clock. Report of Committee on Nomenclature, and discussion thereon.

Papers:

1. Dermatitis Hæmostatica; Dr. H. G. Klotz.

2. A Case of Lupus Erythematosus with Fatal Complications, Dr. W. A. Hardaway.

3. Report of a Case of Universal Erythema Multiforme, with colored portrait and specimen, Dr. L. A. Duhring.

4. An Unusual Case of Sarcoma involving the Skin of the Arm; Amputation; Recovery, Dr. F. J. Shepherd.

5. Multiple Sarcoma. History of a Case, showing Modification and Amelioration of Symptoms with large Doses of Arsenic, Dr. S. Sherwell.

Second Day. Wednesday, September 23, 1891.

Business Meeting (with closed doors) at 9:30 A.M. Report of Treasurer and Auditing Committee. Election of Officers. Election of Active and Honorary Members. Selection of Time and Place of next Meeting. Miscellaneous Business.

Morning Session at 10:30 o'clock. Report of Committee on Statistics.

Papers:

Discussion on Tuberculosis of the Skin:

6. Its Clinical Aspects and Relations, Dr. J. C. White.

7. Its Pathology, D. J. T. Bowen.

8. Its Treatment, Dr. G. H. Fox.

9. Thirteen Cases of Tuberculosis of the Skin, with their Treatment, Dr. J. S. Howe.

10. A Case of Lichen Scrofulosorum, Dr. J. Grindon.

11. Notes of a Visit to the Leper Hospital at San Remo, Italy, with Photographs, Dr. L. A. Duhring.

Third Day. Thursday, September 24, 1891.

Morning Session at 9:30 o'clock.

Papers:

12. The Treatment of Alopecia Areata, Dr. P. A. Morrow.

13. A Therapeutic Note on Alopecia Areata, Dr. L. D. Bulkley.

14. Morphia Atrophica of Wilson, Dr. R. W. Taylor.

15. The Treatment of Pruritus, Dr. E. B. Bronson.

16. Prairie Itch, Dr. L. N. Denslow.

17. Diseases of the Skin associated with Derangements of the Nervous System, Dr. W. T. Corlett.

18. Treatment of Chronic Ringworm in an Institution for Boys, Dr. L. A. Duhring.

Fourth Day. Friday, September 25, 1891.

Morning Session at 9.30 o'clock.

Papers:

19. Notes of a Case of Acute Dermatitis Exfoliativa, Dr. J. E. Graham.

20. Note Relative to Pemphigus Vegetans, Dr. J. N. Hyde.

21. A Study of Myosis Fungoides, with Report of a Case, Drs. H. W. Stellwagen and H. Leffingwell Hatch.

22. Lymphangioma Circumscriptum, with Report of a Case, Dr. M. B. Hartzell.

23. Remarks on Carbuncle, with Report of a Peculiar Case, Dr. H. G. Klotz.

24. Note on Erythema et Nævus Nuchæ, Dr. C. W. Allen.

25. A Case of Lichen Ruber, Dr. J. H. Grindon.

26. The Personal Equation in Dermatology, Dr. L. D. Bulkley.

Retirement of old officers and induction of those newly elected.

Officers for 1891: President, F. R. Greenough, M.D., of Boston. Vice President—L. N. Denslow, M.D., of St. Paul. Secretary and Treasurer—George Thomas Jackson, M.D., of New York.

THE AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION will hold its first annual meeting at the Hall of the College of Physicians, cor. Locust and Thirteenth Sts., Philadelphia, Pa., Thursday, Friday and Saturday, September 24, 25, and 26, 1891, under the Presidency of Dr. G. Betton Massey.

Physicians interested in the discussion of electricity in medicine, are invited to attend without further notice.

WM. H. WALLING, M.D., Secretary,
2005 Arch St., Philadelphia.

HORATIO R. BIGELOW, M.D.,
Chairman Executive Council.

JOSEPH O'DWYER, M.D., LL.D.—At the Commencement of St. John's College, Fordham, in June of this year, the honorary degree of Doctor of Laws was conferred upon Dr. Joseph O'Dwyer, of this city.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 11, 1891, to July 17, 1891.

Col. Charles Page, Surgeon, heretofore assigned to duty in the Division of the Atlantic, will report to the commanding General, Dept. of the East, for assignment to duty as Medical Director, and Lieut. Col. Charles T. Alexander, Surgeon, will report for assignment to duty as attending surgeon, New York City.

Asst. Surgeon A. B. Banister, U. S. A., granted leave of absence for fourteen days.

Major Ely McClellan, Surgeon, heretofore assigned to duty in the Division of the Missouri, will report to the commanding General, Dept. of the Missouri, for assignment to duty as attending surgeon. Hdqrs. Dept. of the Missouri, and examiner of recruits at Chicago, Ill.

Surgeon Bernard J. D. Irwin, U. S. A., relieved from duty at St. Louis, Mo., and ordered to Chicago, Ill., for duty as Medical Director, Dept. of the Missouri.

Asst. Surgeon Paul R. Brown, U. S. A., leave of absence extended one month.

Asst. Surgeon John J. Cochran, U. S. A., leave of absence on surgeon's certificate of disability extended three months.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending July 18, 1891.

P. A. Surgeon L. W. Atlee, ordered to the "Independence."

James Shirley Hope, appointed an Asst. Surgeon in the Navy from July 10, 1891.

Surgeon Wm. Martin, detached from duty at the Marine Rendezvous, San Francisco, Cal., and from special duty in that city and granted leave until September 15, and then to be placed on waiting orders.

P. A. Surgeon M. H. Crawford, detached from the "Independence," and ordered to duty at the Marine Rendezvous, San Francisco, Cal., and to special duty in that city.